

COAL AGE

Vol. 4

NEW YORK, SEPTEMBER 20, 1913

No. 12

Now that the "Employees' Magazine" of the Lehigh Valley Coal Co. and the "Marvel News" of the Roden Coal Co. have blazed the way for the timid ones, we expect to see many similar papers launched in the near future. The possibilities for such educational mediums were realized and taken advantage of in other industries long ago.

Over in Charlotte, S. C., a daily paper, the "Evening Chronicle," possessing a large circulation among the cotton-mill people of that section, has carried on a little pioneering that deserves careful study by all who are interested in the results that may be attained by giving the right kind of publicity to our working classes. In a recent issue of the "Manufacturers' Record" Dorothy Mitchell of the "Chronicle" staff describes rather fully just what she has aimed at and how she has proceeded. She says:

"I have written stories about them, always searching for those things which show their advancement and laying stress upon the people who have achieved anything. Whenever a man is promoted a story is run about him, and if possible a photograph is secured and put in the paper. If a girl makes a success, or does anything worthy, it is mentioned in like manner. If a man saves his money and buys a home, this calls forth a good story, and sometimes a picture of his home is run in the paper.

"These items are published every Saturday, and are run just as the social items are run in the Sunday papers. The only difference is that I do not measure aristocracy or the getting of one's name in the paper by what the parents were, but what the person who is featured has actually done industrially. In all the work, everything is done to encourage

those who have progressed, urging them on to greater things; their names and pictures are published as successful, steady and thrifty people.

"One of the worst faults the mill people have, and that which proves most detrimental to their success, is the habit of moving. In every mill community there will be found a "moving" element, and these are always the poverty-stricken ones and those who excite the sympathy of the betterment agitators. Usually they stay at a mill two or three weeks, or perhaps a month or so, and then seek other quarters for no better reason than the promise of a trifling increase in their weekly wage. Sometimes they leave because they do not like the superintendent, especially if he corrects them. In many instances there have been found cases where the people practically spend all they make outside of grocery bills to bear the expense of going from mill to mill.

"At all times I have discouraged moving and have written stories, as well as talked to them personally, about the disadvantages of it. I have encouraged the growing of gardens, flowers and trees about the premises, as well as the planting of fruit trees and fruit-yielding shrubs, and tried to get them to settle down in a place and make it a home in which to live a life worth while."

Coal corporations that seriously contemplate entering into this particular kind of uplift work, should consider the plan above outlined. The coal journals are able to cover common mining practice in its broad sense, but they cannot record local happenings of a personal nature, the publication of which by a company organ would tend to encourage and inspire the men.

IDEAS AND SUGGESTIONS

The Natural History of Coal

BY L. K. HIRSHBERG*

Now from Cambridge University, England, comes a new treatise upon the Natural History of Coal, by Dr. E. A. Newell Arber. The peculiar value of Doctor Arber's researches are not dependent upon his historic account of coal problems of the present and the past, but on the problems now to be triumphantly surmounted in the near and immediate future. Not only does he present the great importance of more scientific knowledge of coal, but also its prospective commercial possibilities.

Thus he points out most wisely and in good time the fact that after all man is largely ignorant of the composition of coal as well as the manner in which coal was formed. Most of our so called knowledge is actually inference drawn from the rocks and minerals which lie below and above coal beds. Certainly such deductions may easily be as far-fetched as many other scientific theories turn out to be. As a general proposition, geologists have conspicuously failed to offer an entirely satisfactory and tangible explanation concerning the formation of coal. It therefore remains for paleobotanists, paleontologists, and physio-chemists to throw a bright light upon this dark matter.

NEW DISCOVERIES ABOUT COAL

The most recent discoveries about coal have been made microscopically by the French savants, Doctors Bertrand and Renault. They soon ran down the clue and found that many kinds of coal minerals have been produced in open water and are for the most part made up of the remains of certain plants. Particularly is this true with those varieties of coal that are rich in hydrocarbons and combustible gases. Bituminous shales, oil shales, bog-heads and many others are types.

Much less is now known about nonbituminous coals, indeed the less they approach the bituminous types, the less seems to be known about them. The reason of this may be due to the fact that the harder the coal, the less thin must its sections be when cut for microscopic purposes of investigation. To study them under the microscope it is desirable also to decolorize them. When thin slices are prepared for examination, it is usually found that these sections remain opaque, yet coal is undoubtedly homogeneous in structure.

Luckily for the newer investigators on the nature of what coal really is, most of these difficulties have at last been removed. It has now been found possible to prepare fairly thin and transparent slices by the same grinding method used by stone workers. Then by adding an appropriate dye or other coloring matter, the actual stuff present will be made apparent.

It is now generally agreed that all of the present-day theories about the origin of coal, such as the peat-antracite theory, are no longer plausible. These now dis-

credited explanations of the formation of coal in the depths of the earth, are to be substituted by a theory based upon the newer biological and physio-chemical discoveries.

If it were possible with present analytical methods to understand the composition of coal thoroughly, a tenable hypothesis as to its origin could not be constructed unless we also knew the character of the plant fossils which go to make up the body of the coal. The subsequent effects of chemical and physical conditions cannot in any way change such a theory.

Therefore it is now up to the botanist more than to any practical coal man or other scientist, to instruct the world as to the true condition of the coal when originally laid down.

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What about Your Vacation?

Summer has passed, but the very best months of the year are with us. Have you taken your vacation? It's not yet too late. Many of you will say, "No, I'm too busy; the Big Boss wants all the coal we can get and the cost must look right, too."

Some of you will say, "What good can I get out of two or three weeks' vacation?" A number of good honest men will repeat that they have not had a vacation in years, so why take one now. A few will say the expense of a vacation doesn't justify it.

To all of these we say, "Take a vacation, you need it and the cost is the last consideration." The man who needs it most is the one who has been sticking so close to the job that he feels like it could not run without him. Most of those in this class are as honest and loyal in their work as men can be and the impulse to take even a little vacation has been smothered by their strong sense of loyalty and their belief that the boss thinks of them as of a class who are always on the job. No doubt you have been urged by the management more than once to take a rest, but you could not believe they really meant it for you.

You are perhaps one of the superintendents or foremen who know very well the job will run without you, but cannot bear giving up the reins of control for a few weeks. You feel that certain lines of work will not have the close attention you give it and that when you come back you cannot pick up things in as good shape as when you left. You know your assistant is a good man, but you do not want to leave the job entirely with him.

To every man of you we say, "Take a vacation." Here are some of the benefits that will inevitably accrue to you:

You will get out of the rut you have been running in, and you know the only difference between a rut and the grave is in length and breadth. The old saying, "A new broom sweeps clean" can only have been born of the truth that one man on taking up another's work sees the whole plan of affairs with a clearer vision. Too close contact with the daily grind of things dulls the senses. Too

*Baltimore, Md.

much time given to details does not leave time enough for the larger and more important affairs. There are still to be found plenty of you who cannot find time for safety work in its larger sense, that of accident prevention, because you are in the rut of giving all your time to getting out as much coal as possible. Have you ever thought that if your mine produces 1000 tons a day it will take from two to five days' run to compensate for every man you kill or seriously hurt? Yet the list of men killed and maimed in the coal-mining industry is appalling.

After you have been on your vacation a few days and gotten far enough away from your work to realize that the part of the world you are in does not even know of your locality save as a geographical fact, you will begin to appreciate how small your sphere of work is and what is better for you, how little is your personality in the scheme of things. The next thing you know you are wondering how all these strangers, many of whom give evidence of success beyond you, accomplish it. You will have a feeling of ambition to put forth the best effort in you when you get home. This is nothing more or less than a broadening of your mind's activities as the result of giving it rest and relaxation from its grooved routine.

PROBLEMS WILL BE SOLVED

All through your vacation period, even though you may not see or visit a plant like your own, you will find your senses perceptibly quickened by contact with new and bigger things. Your sense of little things will grow less and your appreciation of big things larger. Even while you are resting, perhaps while fishing in some lake, your mind will unconsciously find a better way to do some things at home. Problems that will really increase the output and reduce the cost will work themselves out in your mind. Like a flash it will come to you that an expenditure of ten thousand dollars to cut some drainage ditches through the mines to convey the water to a central pumping plant will enable you to shut down several expensive steam plants for all time. You know that you can show the management as soon as you get home how this can be done, and save the expense in a year or two.

Best of all you will get home refreshed in mind and body. It may appear a little strange to you, but everything has been running smoothly; the output has really been increased during your absence; there have been no serious accidents. In fact, the plant has been doing fine. Do you know why?

The fellow next to you has had his chance and has made good. You think more of his ability and you say hereafter I'll unload more work that counts on him. Good. Your vacation is producing results and pretty soon after you return the Big Boss will say to someone, "Things are humming at the new plant since J. C. took that little spell off."

Go ahead, and see the boss this week and arrange for a vacation. Honest, it will do you good.

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A Stitch in Time Saves Nine

BY PENNSYLVANIA SUPERINTENDENT

I wonder if we can apply the old adage—"a stitch in time saves nine"—around our coal mines. Take, for instance, the coke oven: How many times have you noticed an oven which had a brick out of jamb, and passed it by to fix up another oven a little farther beyond, which,

perhaps, had a whole jamb or maybe an entire arch that needed repairing. You did not even stop to think that by repairing just that one brick, you might have prevented the collapse of the entire arch, which fell in because this one brick was not replaced when it started coming out.

"A stitch in time saves nine," was ignored in this particular case, just as it is passed over in many other instances. This does not only apply to the coke ovens, but to the machinery around the mines and in the mines, as well as to the entry track and everything connected with the entire operation.

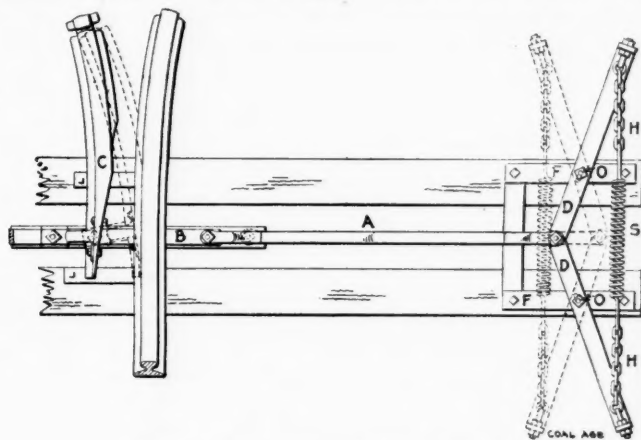
So if you want to be successful in whatever department you are employed, watch for "the stitch in time that will save nine"—then do it now.

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An Automatic Spring Switch

It often happens, in mining practice, that the arrangement of the tracks leading from a slope or drift opening to the tippie is such that it is of advantage to have an automatic switch so arranged that the loaded trip coming out of the mine will set the switch ready for the return of the empties by the same track. Such a switch will often be found of advantage where different motors are hauling from particular sections of the mine, and, therefore, require to return by the same track to the district from which they came.

The accompanying diagram shows a special automatic spring switch, the suggestion of H. E. Lewis, supt.,



DETAILS OF AUTOMATIC SWITCH

Consolidated Fuel Co., Hiawatha, Utah. This switch was intended to meet the requirements just described. The details of construction were designed or worked out by W. W. Jones, electrical engineer, Standard Coal Co., Helper, Utah.

As shown in the figure, the switch rod A and the bar B serve to connect the switch point C with the movable arms DD. These arms have each a bearing or fulcrum at the fixed points OO, each being secured to the bed frame F, by a bolt at that point. A short slot cut in each arm allows the necessary movement when the switch is thrown by the passing cars. The dotted lines show the reversed positions of the switch point and the movable arm. The tension spring S exerts a pull of 100 lb. on the ends of the two arms, which is sufficient for the purposes intended, and holds the switch firmly in the position in which it was placed by the last trip coming from the mine.

Coal Shipping on the Great Lakes

SYNOPSIS—The third and concluding installment on the situation at the head of the lakes. A detailed description of another of the large unloading docks of the Pittsburgh Co. Not only are there facilities for handling an enormous tonnage but elaborate equipment is provided for screening the coal.

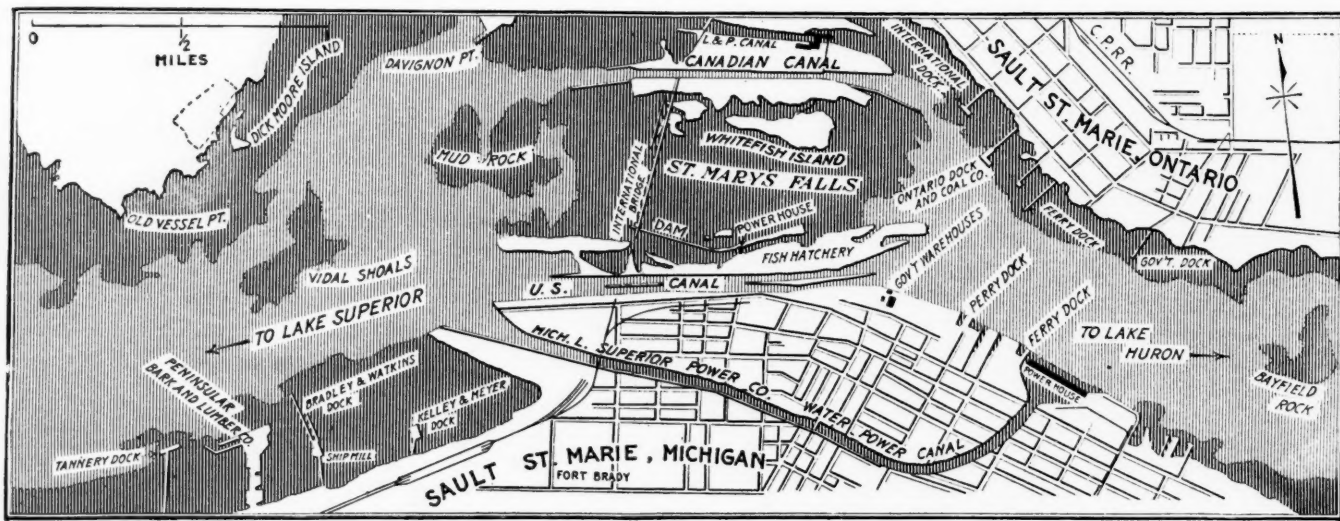
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The plant of the Pittsburgh Coal-Dock Co., a subsidiary of the Pittsburgh Coal Co., at Duluth, is said to be one of the largest in the world for the handling of bituminous coal. It is designed for unloading coal from lake boats to the storage yard and for loading on cars. An interesting feature of the plant is a mechanical screening apparatus of new design and large capacity. The plant has a storage capacity of 1,000,000 tons and an unloading capacity, as shown by recent tests, of 900 tons an hour, including the delay in cleaning up the holds of vessels unloaded. While working in free coal it is estimated that

not provided with a trolley is so operated by using one of the trolleys from a two-span bridge. The two-span bridges have a cantilever extension of 78 ft. out over the dock and there is a 35-ft. cantilever extension from the rear end of the single-span bridges.

Each man trolley is designed to carry a load of 25,000 lb., to hoist the full load of the bucket at the rate of 225 ft. per minute and to travel along its runway at 1200 ft. per minute. Each bridge when carrying a loaded bucket can propel itself along its own runway at a speed of 60 ft. per minute.

The front or water end of each two-span bridge is carried on a portal pier, equipped with bins for loading coal into hopper or gondola cars. The center and rear end of the two-span bridges and the forward end of the single-span bridges are carried on shear legs, each leg running on a single line of rail. These rails are supported on trestles made of steel girders carried on steel A-frames.



DETAIL MAP OF THE SAULT STE. MARIE CANALS. THE ENTRANCE INTO LAKE SUPERIOR

the plant will discharge 1500 tons an hour from a boat to the storage yard. The plant was designed and erected by the Brown Hoisting Machinery Co., Cleveland, Ohio.

UNLOADING MACHINERY

The coal-handling equipment includes three two-span bridges, here shown, extending from the unloading dock, and two single-span bridges. Each span is of 242 ft. The yard is covered by the bridges, which are operated back and forth on a runway 1250 ft. long. Each two-span bridge and one of the single-span bridges is equipped with a man trolley, which carries a two-rope Brown grab-bucket, with a capacity of 230 cu.ft. or 5½ tons, and an operator's cab. The single-span bridges are arranged to register with any of the two-span bridges so as to make a three-span bridge or a continuous runway for a trolley over any one of the two-span bridges and one of the single spans, a total distance of 726 ft. The operating mechanism is arranged so that when a single-span bridge is connected with a two-span bridge the three spans are operated as a unit. The single spans may also be operated as independent bridges. The single span

There is one single rail trestle or runway and one double rail trestle. The former is for the shear leg at the center of the two-span bridges and the latter is for the rear shear leg of the two-span bridges and the shear legs of the single spans. The distance from the foundations to the top of the rail on the trestles is 35 ft. 6 in. The rear ends of the single-span bridges are carried on inverted piers.

The piers for the two-span bridges are each supported on four equalizing trucks, each truck being mounted on four 24-in. double flanged cast-iron chilled-tread wheels. The wheels on each pier are connected by a train of gearing and shafting to the moving gear mechanism located on the bridge span, near the bridge support. Each inverted pier at the rear end of the single spans is carried on two sets of equalizing trucks, each truck supported on eight 24-in. single-flanged chilled-tread wheels. In addition, the rear pier that carries the screening apparatus has (for partially carrying that apparatus) one equalizing truck supported on six 24-in. wheels, each truck traveling on two lines of rails spaced 2 ft., center to center. The six-wheel truck acts as an idler only. All of the wheels in each of the eight-wheel trucks are driven, being

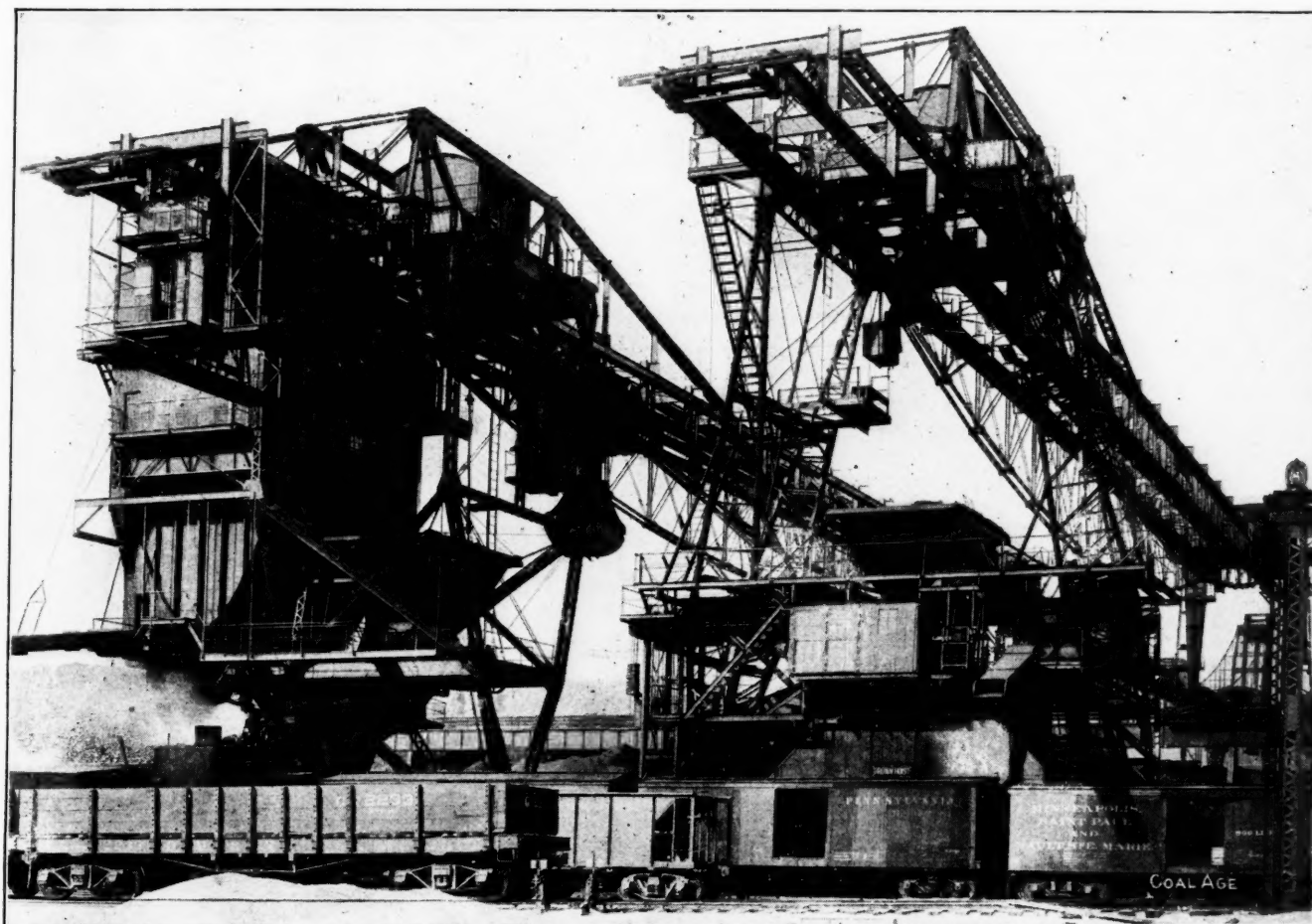
Note—From the "Iron Age," Dec. 7, 1911.

connected by a train of gearing and shafting to the moving gear mechanism located at the top of the pier. Under the other rear pier one-half of the wheels are similarly connected to the moving gear mechanism. Each shear support in the bridges is mounted on two single-rail equalizing trucks, each truck being supported by four double-flanged cast-iron chilled-tread wheels. The wheels are all connected by shafting and gearing to the moving-gear mechanism located on the bridge span.

The shears support the bridge span on sliding bearings under the top chords. The cantilever extensions from the dock end of the two-span bridges are supported from the top of masts over the pier. Attached to the cantilevers are hinged aprons that can be raised and lowered.

is another bin, which is divided into three compartments, each compartment having a capacity of 40 tons. Over this bin is arranged a rotary screen for sizing coal into the three different sizes commonly known to the trade as stove, nut and screenings, and discharging each size into separate compartments of the bin.

Beneath the 30-ton bin located in the main portion of the pier is a shaker screen. This is designed to discharge the coal passing over it into a small hopper, which in turn discharges the coal to a pivoted scraper conveyor. This conveyor carries the coal either into open gondola or hopper cars or into box cars. The coal passing through the shaker screen is discharged into a bin at the lower end of an inclined elevator. This elevator carries the coal to



SCREENING AND SIZING APPARATUS ON THE PITTSBURGH COAL CO.'S DOCK NO. 7. INSTALLED BY BROWN HOISTING MACHINERY CO.

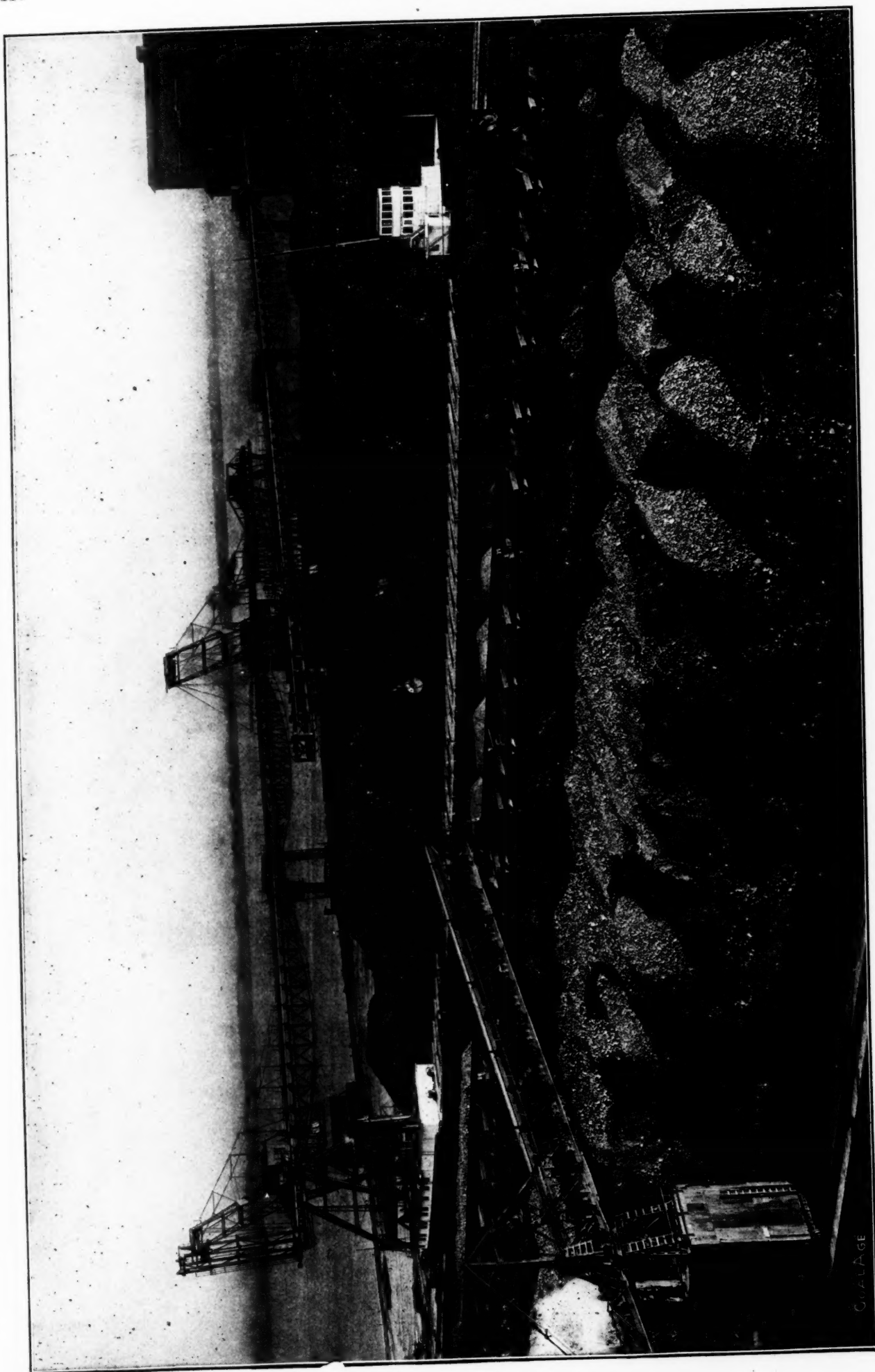
The moving gear for each bridge crane is operated by a motor in a house over the pier support. This motor is controlled from the operator's cab on the man trolley when the trolley is brought to a point immediately under the moving-gear house. The man trolleys are so designed that the operator can turn the bucket through an angle of 90 deg.

THE SCREENING EQUIPMENT

In the portion of the rear pier of the single-span bridge with which is connected the special screening equipment, is located a 30-ton receiving bin. This bin is provided for receiving the coal from the grab bucket on the bridge span and for properly controlling it as it is fed into the screening plant. At the side of the main part of the pier

the rotary screen and it then passes through the rotary screen and is deposited in the three pockets mentioned. Each of these is arranged with gates to discharge to a horizontal belt conveyor. The conveyor may run in either direction so that any of the different sizes of coal contained in the bins may be discharged either to the stock pile or into open cars on a track outside of the pier.

Each bin beneath the rotary screen is also equipped with a separate chute and gate for discharging the contents into a small hopper at the foot of the shaker screen, which is arranged to discharge to the pivoted conveyor previously mentioned. By means of the scraper conveyor the various sizes of coal are loaded into box or gondola cars in the manner described for the coal passing over the shaker screen. The 30-ton receiving bin is provided with



GENERAL VIEW OF THE PITTSBURGH COAL CO.'S DOCK NO. 7 AT SUPERIOR, EQUIPPED WITH BROWNHOIST MACHINERY

COAL AGE

an auxiliary chute feeding into the lower end of the inclined elevator in order that coal taken from the screening stock pile may be sized over the revolving screen.

In general the operation of the screening apparatus is as follows: The coal is first placed in the 30-ton receiving bin. It is then passed over the shaker screen to the pivoted conveyor for delivering it into cars. The coal going through the shaker screen passes into a small bin beneath, delivering to the elevator, by which it is either conveyed to the revolving screens for preparing small sizes or directly into the screening bin for delivering it to a belt conveyor discharging on a screenings stock pile.

By this arrangement when lump coal is being loaded, a carload each of stove, nut and screenings may be taken at the same time. In case lump coal is being loaded and there are no orders for the smaller sizes, the screenings can be delivered from the elevator direct to the screening bin, which in turn will deliver the screenings to the belt conveyor for the stock pile. When taking general screenings from the stock pile for sizing and loading they are dumped by the grab bucket into the receiving bin.

The bins are of parabolic form. The 30-ton bin is equipped with a large reciprocating gate operated by power. The shaker screen is about 5 ft. wide and 15 ft. long. The reciprocating motion of this screen is accomplished by means of connecting links and eccentrics attached to a horizontal shaft belt connected to a 15-hp. motor. This motor also operates the reciprocating gate. The screens are easily removed so that different sizes can be used. The revolving screen is operated by a 20-hp. motor, which also drives the elevator. The belt conveyor is operated by a 15-hp. motor and the pivoted scraper conveyor is operated by a 10-hp. motor.

The other rear pier is equipped with a 30-ton bin, gate, and chute for unloading coal into gondola cars, a screening bin and elevator for screenings, and chutes for unloading screened coal into box cars in connection with box-car unloaders. Beneath the screening chute is a 50-ton bin for catching the screenings. In connection with this screening equipment is a bucket conveyor for raising the screenings to a point from where they are discharged by gravity to a screenings pile on the water side of the pier or carried by a belt conveyor and discharged in cars on the second track on the other side of the pier.

The electrical equipment is arranged to operate on 440-volt 3-phase 25-cycle alternating current. The motor equipment includes the following in addition to the motors mentioned in connection with the screening apparatus, all furnished by the General Electric Company: Three 112-hp. motors for moving the three two-span bridges and 112-hp. motor for operating the single-span bridge that has the extensive screening equipment; one 50-hp. motor for moving the other single-span bridge; one 225-hp. motor in each of the four trolleys for hoisting; two 112-hp. motors in each trolley for the trolley travel; one 5-hp. turntable motor in each trolley for rotating the grab buckets; one 2-hp. clutch motor in each trolley, and one 15-hp. continuous running motor for operating the screening elevator and conveyor in the pier of the single-span bridge not containing the extensive screening equipment. The travel motor on each bridge is operated by a General Electric drum-type controller. The hoist motor on each trolley is operated by a master operated magnetic controller. The trolley travel motors on each trolley are operated by a master-type controller.

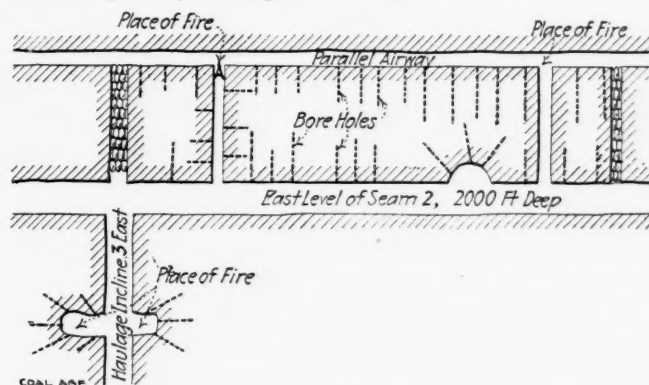
During tests of the plant recently made the Steamer "J. S. Ashley," with 8983 tons of lump coal, was unloaded in 10 hr. and 15 min. and the cargo of the "J. E. Upson," 8747 tons of the same grade, was taken out in 10 hr. and 55 min. actual working time. While working in free coal each bucket averaged nearly 6 tons to the lift.

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Averting a Mine Fire in Germany

The following account of the suppression of an incipient mine fire by the saturation of the ribs, is translated from the "Zeitschrift für das Berg- Hütten- und Salinenwesen," Vol. 61, No. 1.

On May 16, 1912, a strong odor of fire was noticed in the east gallery of seam No. 2, in the 2000-ft. level of the gas-coal workings of the Gerhard Colliery, in the Saar district, Prussia. In the parallel entry, there was found at a point A, as marked in the figure, in close proximity to an old ventilating passage, already badly squeezed, a warm place in the coal, proving to the management that a mine fire was developing. It later became evident that the great pressure had heated the coal seam which was at this point 13 ft. thick. By hastily making a new crosscut, the heated coal was reached with a continuous and plentiful supply of water. Thus it was cooled off and the principal danger averted.

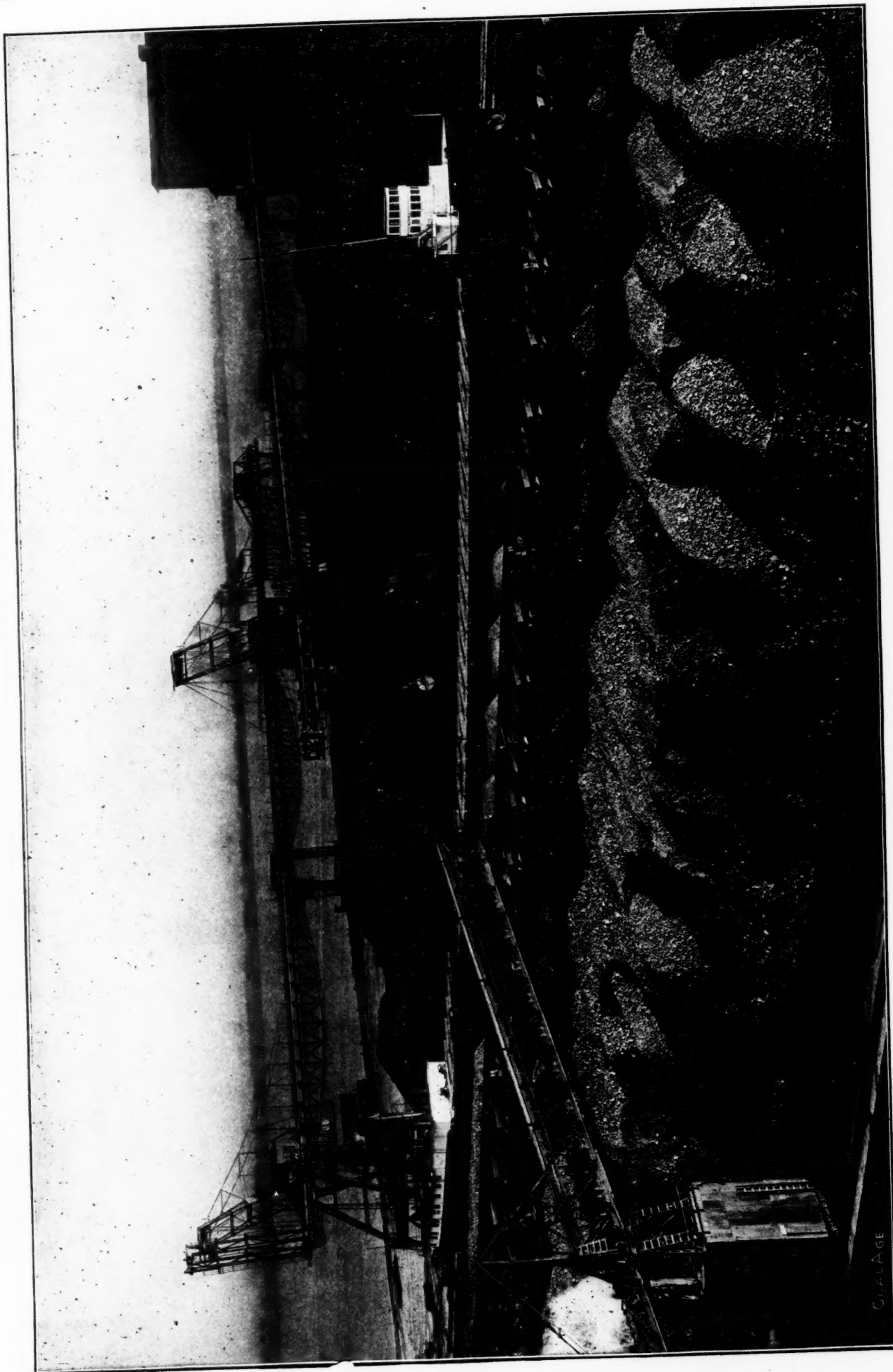


SPONTANEOUS COMBUSTION WAS CHECKED BY WATER FORCED INTO DRILL HOLES

Further investigation of the pillar showed the presence of still other places where the coal was in a state of incipient spontaneous combustion. As the rock between seams 2 and 3 had already been broken, it was impossible to flood the section imperilled without preventing the operation of the lower seam, consequently the Dorsfeld saturating apparatus, which had already been used in this mine was utilized for the suppression of the fire.

Along a pillar length of 300 ft., and ranged at distances of 17 to 35 ft. in the line of dip of the seam, bore holes were drilled 10 ft. deep, and into these the apparatus was introduced. This was connected with the existing water piping under a pressure of 300 lb. At the end of a few hours the water had penetrated through the pores and crevices of the partly crushed coal and was escaping into the level. After a few days the fire danger could be regarded as removed.

In the months of August and September, three other fires of similar character occurred. In these also the rib-saturating apparatus did good service. Here, at the same distances of 17 to 33 ft., as before, deep bore holes were drilled with the Crälius drilling machine, and the apparatus inserted.



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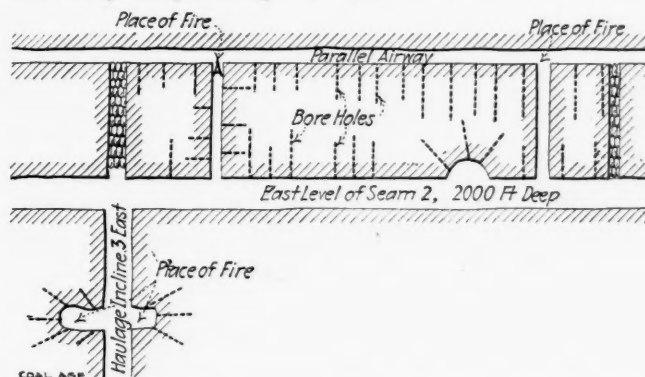
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On May 16, 1912, a strong odor of fire was noticed in the east gallery of seam No. 2, in the 2000-ft. level of the gas-coal workings of the Gerhard Colliery, in the Saar district, Prussia. In the parallel entry, there was found at a point A, as marked in the figure, in close proximity to an old ventilating passage, already badly squeezed, a warm place in the coal, proving to the management that a mine fire was developing. It later became evident that the great pressure had heated the coal seam which was at this point 13 ft. thick. By hastily making a new crosscut, the heated coal was reached with a continuous and plentiful supply of water. Thus it was cooled off and the principal danger averted.



SPONTANEOUS COMBUSTION WAS CHECKED BY WATER FORCED INTO DRILL HOLES

Further investigation of the pillar showed the presence of still other places where the coal was in a state of incipient spontaneous combustion. As the rock between seams 2 and 3 had already been broken, it was impossible to flood the section imperilled without preventing the operation of the lower seam, consequently the Dorsfeld saturating apparatus, which had already been used in this mine was utilized for the suppression of the fire.

Along a pillar length of 300 ft., and ranged at distances of 17 to 35 ft. in the line of dip of the seam, bore holes were drilled 10 ft. deep, and into these the apparatus was introduced. This was connected with the existing water piping under a pressure of 300 lb. At the end of a few hours the water had penetrated through the pores and crevices of the partly crushed coal and was escaping into the level. After a few days the fire danger could be regarded as removed.

In the months of August and September, three other fires of similar character occurred. In these also the rib-saturating apparatus did good service. Here, at the same distances of 17 to 33 ft., as before, deep bore holes were drilled with the Crälius drilling machine, and the apparatus inserted.

Royalties as Percentages of Market Price

BY WILLIAM GRIFFITH*

SYNOPSIS—The public lands should be leased for long periods or perpetually. This will promote conservation and economic efficiency in operation. Leasing will enable the prospector to earn the fruits of his discovery and he will not be disqualified from operating by a demand for the large payment necessary to purchase a fee-simple title to the land to be exploited. By making the royalty a percentage of the selling price, a perpetual contract could be made which would be equitable and advantageous to lessee and lessor alike.

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Reformers, in their recent efforts to secure for the people a greater share of the proceeds of mining enterprises on public lands, have fixed upon the leasing method as the one best adapted to secure this end, and hope to substitute it for fee-simple sales. To avoid the chance that an increased market price for the products might result eventually in the royalty becoming unduly small compared with selling prices, they would exact short-tenure leases, that the royalty might be changed from time to time as the market value of the product varied. Thus they would reserve for the people a more equitable share of the proceeds.

SHORT TENURE AND WASTE

I submit, however, that this proposed plan of short-tenure leases is unsatisfactory, and one of the most wasteful that could be conceived as has been abundantly proved during the hundred years' life of the coal industry of Pennsylvania, during which time all sorts of titles have been held. Short tenure tends toward small operating units, careless methods, extravagant waste of national resources, with excessive loss of human life, while long tenure promotes large operating units, careful and scientific methods, with the greatest possible conservation of life and property. If the public lands of this country are to be leased, the holdings should be perpetual, or for not less than 50 years, unless the mineral is sooner exhausted, and rights of renewal should be accorded to the lessee. In order that the royalty may fit the fluctuating physical and market conditions, it should be arranged on a sliding scale, automatically adjustable, a percentage, if you please, of the market value of the product; thus obviating the necessity for frequent changes of lease and royalty.

THE PERPETUAL LEASE HELPS THE PROSPECTOR AND OPERATOR

A perpetual or long-term lease is best for the lessee. If he is a prospector, it encourages him to explore, and develop the property, and his reward would be secured with the least outlay, for if he shows a good prospect his lease is more salable than a fee-simple title, because there is less money at stake and less hazard on the part of the purchaser.

If a lessee is an operator, such leases are best for him, because the money which he would otherwise invest in a

fee-simple title may be used to prove the property, and if found good, to develop and equip it. He thus secures the coal bed on its merits, and can regulate his investment accordingly. If the developments show the property to be worth the outlay he will be warranted in installing substantial equipment, and his title affords suitable security upon which, if desired, to borrow the necessary capital. If his provings show the property to be unsatisfactory, he may forfeit his lease, and thus save what would otherwise be lost through purchase of the fee-simple title.

FINANCIAL ADVANTAGES OF LONG-TIME LEASEHOLDS

Next to an outright ownership, a perpetual lease is the best from the viewpoint of the financier, because it tends toward more permanent equipment, larger outputs and profits, thus affording better security for loans. It permits long-term bonds which are more attractive to investors. Short-term leases or contracts, subject to changes at renewal periods, are poor security, and cannot be easily financed.

From the viewpoint of the conservationist the perpetual lease is preferable because the lessee expects to exhaust all the coal, and, therefore, conserves the supply for the future by avoiding waste in mining, and to secure this end, can afford the expense necessary to install permanent, up-to-date plants, use the latest and best mining methods, employ competent engineering advice, and install means for preserving the lives and comfort of employees.

It is to the advantage of the operator, for conservation purposes, to experiment with and investigate new methods of mining and utilizing his product in order to make a market for inferior portions of the coal which might be otherwise wasted.

The quantity of ordinary waste or refuse material from large plants is so great that its possible value becomes an item of considerable importance, and is worth the expense of searching out new methods for its utilization.

PUBLIC WELFARE DEMANDS PERPETUAL LEASES

Perpetual leases promote public welfare because: They stimulate prospecting and the discovery of new coal or mineral areas; they hasten developments more rapidly than any other sort of title; and they will produce revenue for school and territorial purposes.

The above general principles would seem to apply with double force to the coal lands of Alaska, because the best coals of the territory are high-grade, only because of their proximity to the volcanic rocks, and are, therefore, liable to be much broken, folded or crushed through the movements or quakings common to eruptive measures.

On account of the unfavorable physical conditions, added to the high cost of labor and material, and lack of transportation facilities, the preliminary expense of proving Alaska coal lands will be unusually large. The investigation must be made, however, before the operator is warranted in making the investments necessary to equip a mine plant. How much better, therefore, it would be under these circumstances if land could be purchased on its merits, by this installment plan, instead of first

*Mining engineer and geologist, Scranton, Penn.

Note—Article read before the Spokane, Wash., meeting of the American Mining Congress, entitled "Leasing of Mineral Lands."

hazarding the cost of a fee-simple title, which might ultimately result in a dead loss.

In the Eastern United States no one favors the short-tenure lease. The coal-land owner, as the result of dire experiences, views it as the most ingenious device ever instituted for the purpose of wantonly wasting his substance, and the operator regards it as a delusion and a snare. It deludes him with the pleasant but often mistaken notion that he can pay out the investment with large profits before his short lease expires, and it becomes a snare when he gets in financially, and then finds that he can't get out.

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Modernization of Conveying Plants

SPECIAL CORRESPONDENCE

SYNOPSIS—A description of a telpher system that transports coke from the oven bench direct to the mouth of the blast furnace without removal from its original bucket. Breakage is thus reduced to a minimum.

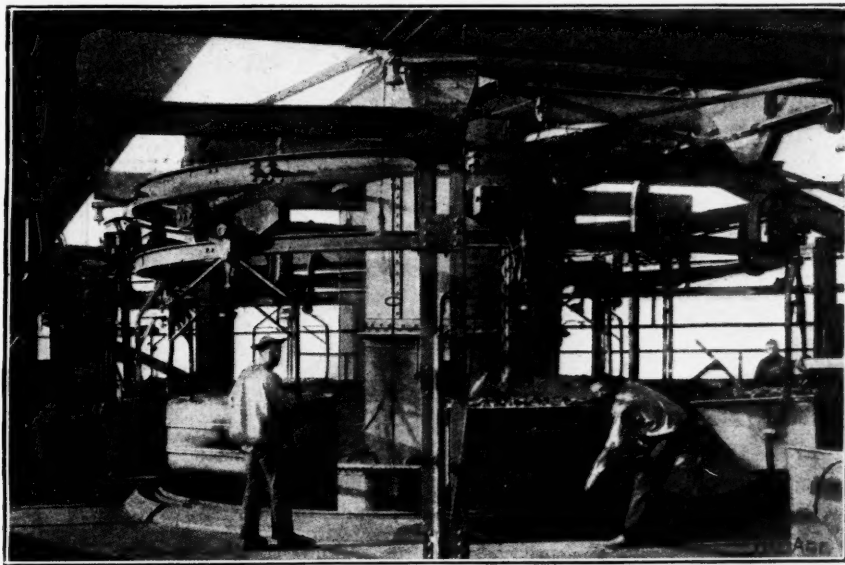
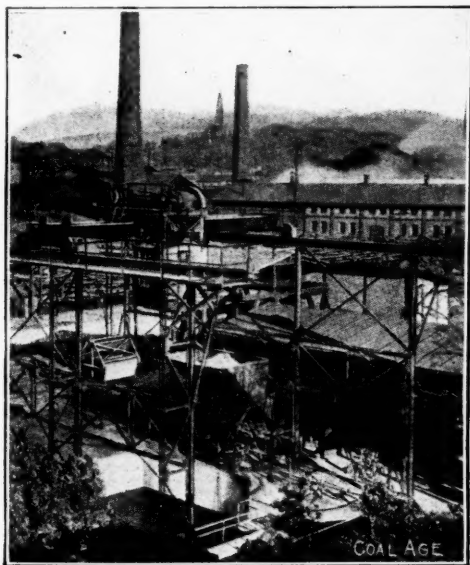
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One effect of the great competition which at present exists in the production of iron and steel, as well as in allied industries, has been to render the whole process of

Trzynietz, belonging to the Austrian Mining & Ironworks Co.

One of the most difficult problems in the reconstruction of the conveying apparatus at this works was the conveyance of the coke from the ovens to the blast-furnace mouth. This was rather a difficult undertaking, as the coke-oven bench was separated from the blast furnaces not only by a number of buildings such as boiler houses and a smithy, but also by a storage ground for ore. It was important also to avoid rehandling, and to prevent any considerable fall into the furnace mouth.

The method adopted by Messrs. Adolf, Bleichert & Co., of Leipzig and London, who undertook this modernizing of the transport system, was the use of a telpher line combined with an inclined section having a rope drive leading to the charging platform. The coke is shoveled direct into the telpher cars from the quenching stage. At this point the workman in attendance starts the loaded cars by engaging a switch. The next empty bucket thus moves up and stops at the proper point for loading. The loaded car runs automatically without supervision on a suspended track around various curves between the buildings to the sorting line, where it passes over a weighing machine before taking up a position behind the pre-



TWO VIEWS OF THE SUSPENDED TELPHER SYSTEM

production and smelting the subject of careful survey in order to detect any points of economy which could be adopted in the handling processes involved. It is nowadays realized that in many instances success or failure depends largely on a decimal point in the works production costs. Anything, therefore, which tends toward the elimination of useless labor and time has its definite value.

OLD PLANTS MODERNIZED

For this reason works which have been established for considerable periods have been modernized and revolutionized. Newer works have, of course, availed themselves of the most modern advantages in methods of handling material. Considered from a technical standpoint, it is perhaps most interesting to note the way in which the older plants have been thus brought up to date by the application of modern devices, one of the conspicuous examples of which is the Austrian plant situated at

ceding bucket at the regulation distance fixed by a block system.

When a coke charge is required, a signal is given from above and the man supervising the traffic below engages a switch, whereupon the carriers automatically start one after another. On arrival at the inclined section they couple automatically to the traction rope and uncouple again on reaching the top, proceeding to the mouth of one or the other of the two furnaces according to the position of the switches. Here they discharge by tipping. The drop is small and the coke suffers no damage. The buckets then return to the coke ovens.

The traffic is continuous and has a loop system, so that there is no change in the direction of travel. It will be seen that the transport of small quantities effected by this means offers special advantages when various classes of ores have to be smelted because it is simple and easy to make the necessary mixtures accurately.

An Accounting System for Coal Companies

By J. C. McNEIL

SYNOPSIS—A brief description of a simple system of bookkeeping applicable to any coal company, in which reliance is placed upon vouchers and loose-leaf forms, so that the amount of work to be done is reduced to a minimum.



The coal industry, is one of wasting assets and hence the accounts of the coal companies should be kept in such a manner as to exhibit at all times the true status of its affairs.

The revenues of a coal company are derived principally from four sources, viz.: Sales of coal and merchandise, tenement rentals and revenues from miscellaneous sources.

COAL SALES

Invoices should be rendered to each customer for all coal sales, showing such details as are needed for the business. They should be numbered consecutively, beginning on the first day of each month, or the first of each fiscal year, as may be deemed necessary, and should be entered in an invoice register ruled to give all the information shown on the invoice. One general ledger account should be kept for the debit "Invoices Rendered." The credit account should be "Coal Revenue," or if it is desired to exhibit the revenues from each grade of coal, proper credit accounts with the different grades should be set up. A side ledger should be opened for the purpose of opening accounts with the various customers, making the account Invoices Rendered, the controlling account for this ledger.

MERCHANDISE SALES

While it is the custom of some companies to treat the merchandise scrip issued plus the cash sales as the merchandise sales for the month, this method is not accurate. A daily report of sales, divided as between cash and scrip, should be obtained from the manager of the stores and the total of these reports at the end of each month should be debited to the store manager and credited to merchandise sales. The office cash account should be debited with the cash received and the scrip issues account debited with scrip turned in and the total of these two debits passed to the credit of the store manager's account, which automatically clears that record. In this manner, the actual amount of the merchandise sales can be accurately determined and the credit balance standing in the scrip issues account will always show the amount of merchandise orders in the hands of employees and not redeemed.

TENEMENT RENTALS

The usual method of handling these rentals is through the payrolls, the debits being made against the employees occupying the houses and the total of the column rent being passed to the credit of tenement-rent revenues. It would also be a good plan to make up a statement each month showing the numbers of the houses, which would have to be numbered for this purpose, the name of the occupant, the amount of rental and the payroll sheet

and line numbers on which the deductions are made. In this way, a permanent record of the occupancy of the tenement houses would be on file.

MISCELLANEOUS REVENUES

Revenues are always received through the sale of some materials, purchased for other uses, from freight claims, and various items arising in the usual course of business, for which regular invoices should be prepared for proper record. It would not be wise to take these items through the invoices-rendered account, as it is desired that this account should represent the sales of coal. It would, therefore, be better to have a separate register for these miscellaneous bills, which should be numbered in a series separate and apart from the coal invoices, and also provide a side ledger for them. The controlling debit account for these items should be known as sundry ac-

ANY COAL MINING COMPANY [*]		NO.	
ANY PLACE	TO	DR	MONTH
ADDRESS		YEAR	
When properly received this voucher will be paid at TREASURER Correct: AUDITOR Approved: GENL. MGR	FOR		
RECEIVED		191 OF ANY COAL MINING COMPANY, THE SUM OF (\$)	
		DOLLARS, IN FULL SETTLEMENT OF THE ABOVE	
		COAL AGE	

FIG. 1. VOUCHER FOR MAKING PAYMENTS

counts and the credit account would, of course, be the various accounts affected by each bill or invoice. The charges to this account would come from the bills, which should show the credit account for a corresponding amount, or from the vouchers for payments made for various accounts. As the corresponding credits for these charges are made from vouchers, they would come through the vouchers register and the bills would be issued for record and collection only. They should, therefore, only be entered in the record column of the sundry-accounts register.

CLEARING REVENUE ACCOUNTS

While it is customary to charge the revenue accounts and credit profit and loss direct, it would be better to carry an income account, the net balance of which should be charged to profit and loss at the end of each fiscal year. In this manner, the various revenue accounts would be debited and the total amount credited to income account, while the expenses would be handled as debits to income account and the various expense accounts credited. The balance would then be passed to the debit or credit of profit and loss and the contraentry made to income ac-

*Artemus, Ky.

count. In this manner, the profit and loss account would show at a glance the net profits or losses of the business for the period represented.

EXPENSES

The expenses of a coal-mining company would come under four general heads: Maintenance expenses, production expenses, sales expenses and general expenses. These accounts would, of course, be the general ledger-expense accounts and could be subdivided into various detailed accounts for statistical purposes in a manner which I shall later explain. These accounts, however, cover in the main all the expenses of a coal-mining company.

Maintenance expenses represent all the expenses made by the coal company for maintenance of its properties, such as mines, machinery, tenement houses. Maintenance of these properties would mean repairs; depreciation of the properties; ordinary renewals of machinery, mine cars, and other properties about the plants.

ANY COAL MINING COMPANY		NO.	
ANY PLACE	TO	DR.	MONTH
ADDRESS		YEAR	
DISTRIBUTION		FOR	
CORRECT:		APPROVED:	
COAL AGE		GENL. MGR.	

FIG. 2. VOUCHER FOR FILLING

Production expenses should represent the total cost of producing the coal at the mines, including only the actual costs of production. Into this account should be charged the monthly amounts set aside for depletion of coal lands, etc.

Sales expenses should represent the entire cost of marketing the output. This account should be charged with the amounts expended for conducting branch sales offices, advertising, salaries and expenses of agents and officials engaged solely in the sales end of the business.

General expenses should represent the general expenses of conducting the business, which are not properly chargeable to the other expense accounts. To it should be charged insurance, taxes, legal expenses and salaries and expenses of the general officers not devoted entirely to one department.

Expenditures made for additions and betterments to the properties which do not represent renewals of existing structures or machinery should be charged to an additions and betterments account. The total of this account should be cleared at the end of each fiscal year by charging the amount to capital accounts. In this manner, the capital accounts would represent all the expenditures made for the properties when acquired and also all the improvements put thereon. The depreciation

and the depletion of the properties will be taken care of in appropriate reserve accounts which I will explain hereafter.

DETAIL EXPENSES

Under maintenances, there should be entered in details expenses made for: Maintenance of tipples and outside structures, maintenance of power plants, motors and machines, tracks, ventilation, timbering, removal of slate, depreciation of the various classes of machinery, and such other primary accounts as may be necessary.

Under production expenses, there should be entered the details of expenses made for: Mining, hauling, ventilation (operation), lubricants for machines, barn expenses, removal of water, operation of power plants, and such other items as properly belong to the actual expenses of producing the coal.

Under sales expenses, the charges made for salaries of sales agents, expenses of sales offices, proportion of general office expense, expenses of yards, freight on coal sold delivered at destination, advertising and other actual sales expenses should be entered in the details of these expenses.

Under general expenses, there should be charged taxes, insurance, royalties, salaries and expenses of officers, depletion of coal measures, interest and discount, and such other expenses not included in maintenance, production or sales expenses.

Under additions and betterments, there should be charged all expenditures made for additions to the properties which are not renewals of existing structures.

METHOD OF HANDLING

It is intended under this system of accounts that all payments are to be made on vouchers which are properly approved by the proper officer authorized to do so. As shown by Figs. 1 and 2, the vouchers should consist of two parts, the pay part and the file part. Vouchers should be made each month in favor of each party rendering services of furnishing material, showing the dates and amounts of the invoices with a brief description of each, the totals of the invoices entered and written in words in the receipt portion of the voucher. All supporting papers should be fastened to the file part of the voucher and passed to the auditor, who should enter thereon the month and audit number. By using the number of the month for which vouchers are made, with three additional numbers, provision is made for the issue of 999 vouchers in any one month.

Vouchers should be arranged alphabetically, as nearly as possible, before numbering. They should then be entered in the voucher register, the first columns of which should show the numbers, parties in whose favor drawn, purpose (briefly) for which drawn, and the amount. The debit columns of the voucher register should be headed for each of the general accounts and such other accounts as would be affected by the issue of vouchers and for which an accumulative total would be desired for book entries; also a special column should be provided for such accounts as might come up and for which no special columns had been provided. The credit side of the voucher register should show the net credit to be posted to the voucher liability account, a special discount column and such other credit columns as the nature of the business would require. Under this system it is pro-

charge of legal interest on the investment therein, it is not profitable to have the money so invested. The funds thus set up should be in terms of cash, not book values, and it would be well to invest the amounts in bonds or other securities, so that when the mine has been exhausted the stockholders can be returned their investment and the dividends paid them will truly represent the profits. Additional lands purchased should be charged to the depletion reserve account and not the property account. A charge to property account for additional lands purchased from funds secured from the profits of the business would swell the property account out of proportion. It must be remembered that in coal mining, every ton of coal removed from a property reduces its value to that extent.

The balance sheet of a coal company should show first the property assets, such as lands, equipment, etc.; second, bills and accounts receivable; and, last, liquid assets. The liability sheet should show the capital liabilities, funded liabilities, notes or bills payable, current liabilities for labor and materials, reserve-fund liabilities and last the profit and loss, which, of course, in an efficiently managed coal business should appear on the credit side.

A system of this kind can be applied to a concern operating any number of mines, is very flexible, and at the same time very effective. Its purpose would be to accurately record the history of a coal business.

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Mining Show and Annual Convention of the American Mining Congress

That the manufacturers of mining machinery and appliances and the makers of safety and rescue devices have been awaiting just such an opportunity as will be presented in Philadelphia, Oct. 17-25, when the American Mining Congress will hold its first national Mining Show or Exposition, became pleasingly apparent to the officers of the congress a few days after the project was launched. There has already been such a response from manufacturers that it is feared there will not be space for all who may apply.

It is already regretted by the congress that Horticultural Hall, in which the exposition is to be held, is not larger, and, while it may prove inadequate to the demands to be made upon it, nevertheless, it is large enough to stage a great industrial show.

There is already some talk among the officers of the congress of cutting down the amount of space being asked for by the larger corporations in order that there may be a greater diversity of exhibits. Provisional contracts are being made to meet this contingency.

"The manufacturers have been quick to appreciate that this will not merely be an industrial show to satisfy the curiosity of the public," said Richard L. Humphrey, the director of the exposition. "They realize that the convention of the American Mining Congress, which is to be held during the week of the exposition, will bring to Philadelphia a great gathering of practical mining men who are directly interested in the exhibits and men who will either be purchasers then and there, or who will make their purchases after returning home and weighing the efficiency and need of the devices.

"The exposition will be the first general national clear-

ing house between the men who make mining machinery and the men who use such machinery. Mining men, in need of new equipment, understand fully what a tremendous task they have on hand when they start out to find the machinery that is best adapted to the conditions of their mines. They see their opportunity in the mining exposition. The indications are that the American Mining Congress will have the greatest and most representative convention in its history.

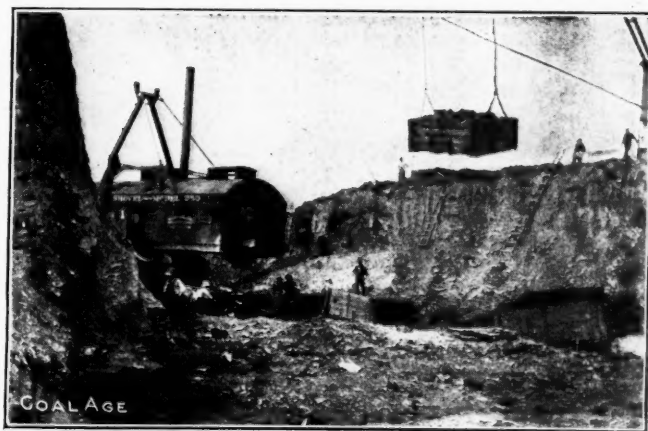
"It is proposed to bring together at the exposition a variety of exhibits, affording instructive object lessons of greatest value to the future of the mining industry. The American Mining Congress and the first mining exposition will afford an unusual opportunity for the interchange of views, and is by far the most comprehensive attempt that has been made in the history of the mining industry to demonstrate its needs and the efficient utilization of the mineral resources of the country."

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A Trackless Mine

A muleless, trackless, motorless coal mine is one of the latest and most novel improvements in open-cut or strip-pit mining in the Pittsburg, Kansas, coal field. The style of mining itself, where steam shovels are used, is comparatively new.

In two or three of the 25 strip pits in this country lifting cranes on the banks of the cuts are used to elevate 5-ton skips of coal to the surface, there depositing them on the running-gear of a tram. These cars, filled with



AN OPEN TRACKLESS MINE

coal, are hauled by a dinky engine to a derrick which picks the skips up and dumps them in railway cars. It is claimed that nowhere else in the country is such a method used in coal mining.

The lifting crane travels by its own power and keeps on the bank of the cut abreast of the coal diggers in the bottom of the pit, which usually is from 24 to 30 ft. deep. Ladders are used by the workmen in entering and leaving the workings.

Other pits have been employing tracks and trams in the bottom of the huge trenches, as is done in underground mines, and most of them use mules for motive power. In such pits the coal is hauled to the surface on inclines.

The coal vein is about three feet thick and is uncovered by steam shovels, some of which are the largest ever constructed. The yield is somewhat over 5000 tons per acre

POWER DEPARTMENT

Does Bituminous Mining Pay?

By A. E. RICKARDS*

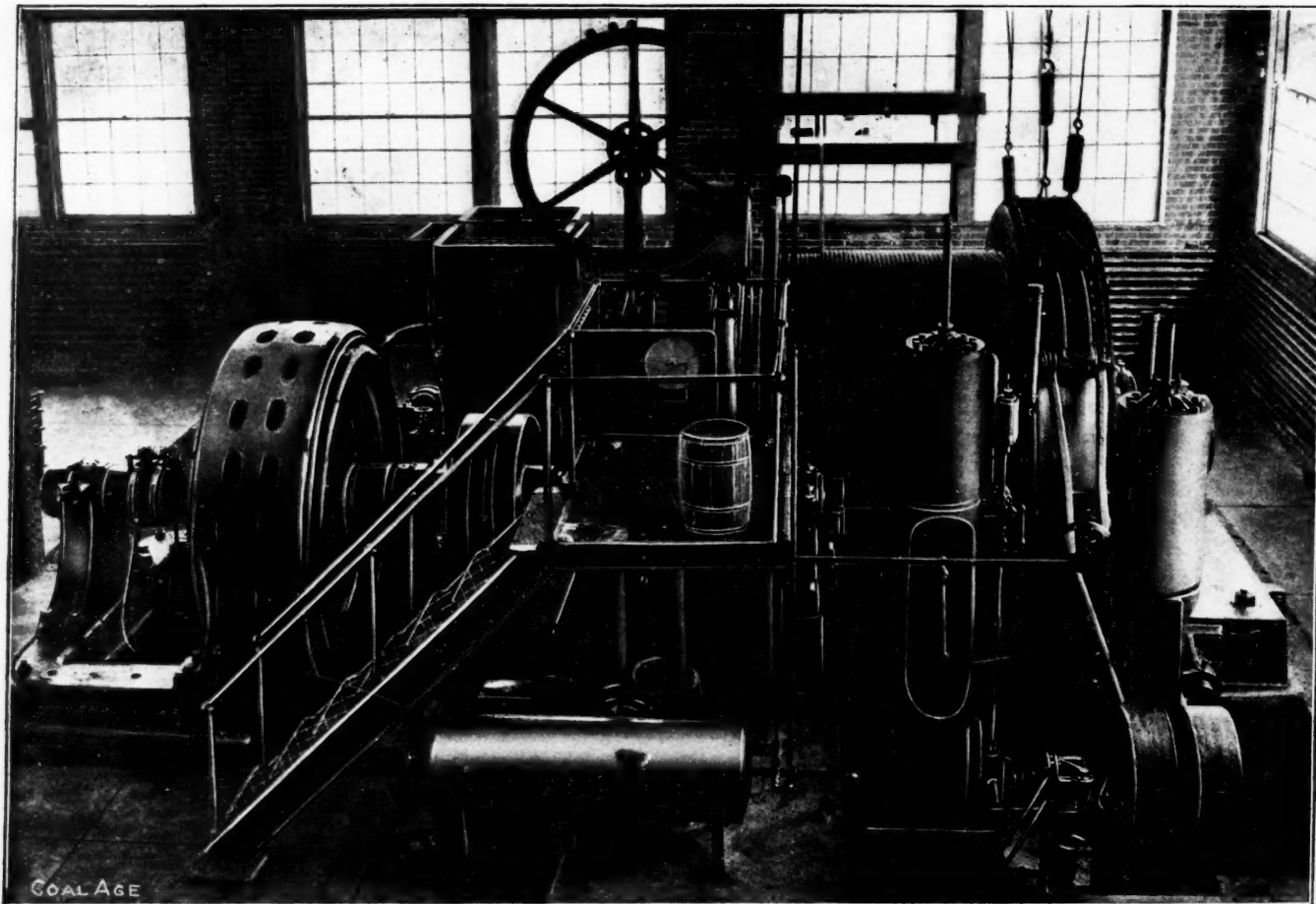
SYNOPSIS—Some interesting facts and figures are here presented, covering the coal production of the country during the past, and showing the steadily increasing amount mined per capita of population and its rising cost per ton. The principal opportunity for economy in mining cost is then discussed.

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In the year 1920, there will be 835,000,000 tons of bituminous coal mined in the United States. This amount is over twice the quantity produced in 1909. With this great increase in the demand for bituminous coal, at first

it shows that this country is changing rapidly from an agricultural to a manufacturing one. It also shows that there are two other factors which have a material bearing upon this great increase in the demand for coal. These factors are the rapid growth in population and the remarkable increase in the demand for fuel per capita.

For the past 50 years the population increased at an average rate of 23.5% per decade. The demand for coal per capita has increased from 0.26 tons in 1860 to 4.54 tons in 1910. Or, in other words, in 1910 there was 4.54 tons of coal mined for every man, woman and child living in United States at that time. During the past two decades the coal mined has increased at an average rate of 62% per capita per decade.



A 750-HP. ALTERNATING-CURRENT MOTOR DRIVING A MINE HOIST

glance, one would consider its production a very profitable business. However, to earn a legitimate profit becomes a more difficult problem each year. These statements can be verified by referring to the United States census reports and those of the Geological Survey.

The data given in this paper are compiled from these reports and indicate that the operators have a big problem before them. The first table is most interesting—

*General manager, Industrial Engineering Co., Pittsburgh, Penn.

If these averages hold true until 1920 the coal mined per capita will be 7.36 tons. If the population increases at the same rate as during the past 50 years, there will be 113,475,000 inhabitants in the United States in the year 1920. On this basis the coal mined in that year will amount to 835,176,000 tons. This is an increase of 100% over that mined in 1910. By comparing this increase with the per cent. increase in the quantity of coal mined during the past 50 years, the amount predicted for 1920 seems entirely probable.

TABLE No. 1. COMPARATIVE ANALYSIS OF BITUMINOUS COAL MINED IN PROPORTION TO THE POPULATION.

Year	Population		Quantity of Coal Mined Per Capita			
	In Numbers	Percent Increase in 10 yrs.	Tons per year	Per cent. Increase in 10 yrs.	Quantity Mined in Tons	Per cent. Increase in 10 yrs.
1860	31,443,000	.....	6,494,000	.....	0.262	.....
1870	38,558,000	22	17,371,000	167	0.45	73
1880	50,155,000	29	42,831,000	147	0.855	89
1890	62,947,000	25	111,302,000	159	1.77	108
1900	75,994,000	20	212,316,000	91	2.8	64
1910	91,972,000	21	417,111,000	96	4.54	60

Coal was first discovered in this country in the year 1670 by Father Hennepin, a French missionary. It was found close to the Illinois River near the site of the present city of Ottawa. The first actual mining of coal was about 1744 in the Richmond Basin, Virginia. The first records of production were in 1822, which shows that about 54,000 tons were mined.

REMARKABLE PROGRESS HAS BEEN MADE

In 1890, this country was the second coal-producing nation of the world. At that time Great Britain's production exceeded ours by about 30%. However, by 1900, the United States had overtaken Great Britain and has since maintained the advantage with an increasing lead each year. In 1911, the coal production of this country exceeded that of Great Britain by 60%. Today the United States is by far the greatest coal-producing country in the world.

Chart 1 shows graphically the quantity of bituminous coal mined each year from 1890 to 1912.

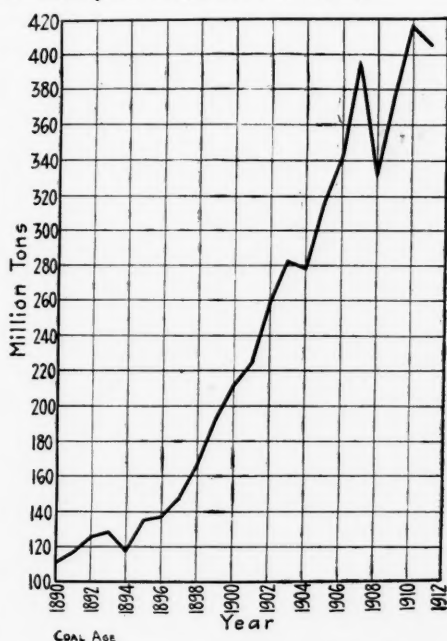


CHART 1. AMOUNT OF COAL MINED YEARLY

In almost any other industry such a growth in the demand for its product would have caused a considerable increase in the price of its commodity. However, this did not take place in the case of coal production. In fact, at times the selling price was so low that it was a difficult task for the operators to earn a legitimate profit. This condition of affairs is caused by a constantly increasing competition. As the demand increases, new workings are continually opening up.

This makes a capacity in excess of the demand. This condition has existed for the past 25 years. The owners of coal lands are always looking for an opportunity to develop them. The railroads also encourage competi-

tion by continually extending their lines into new fields. This gives them additional tonnage and at the same time secures a low-priced fuel for their own consumption.

Chart No. 2 shows the effect of keen competition upon the selling price of coal. This chart shows the average selling price per ton per year at the mines.

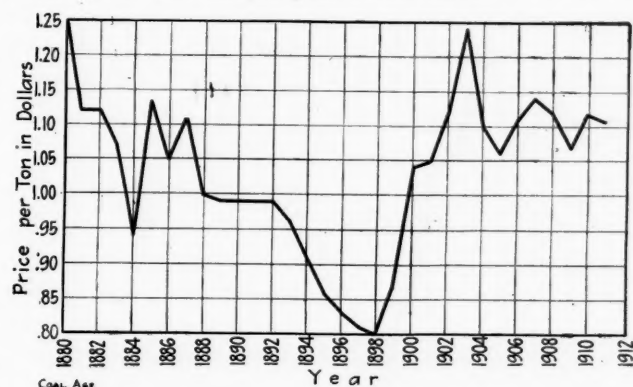


CHART 2. SELLING PRICE OF COAL PER TON AT THE MINES

To make a profit with the low selling price and the continual increase in the cost of production, is indeed a problem. One way to solve this is to increase the output. Mr. Edward W. Parker states "that the present bituminous mines in the United States are capable of producing 600,000,000 to 700,000,000 tons per year." He claims that this is possible without opening up another new working. To do this, of course, requires ample transportation facilities and plentiful labor supply.

THE PRESENT STATUS OF THE INDUSTRY

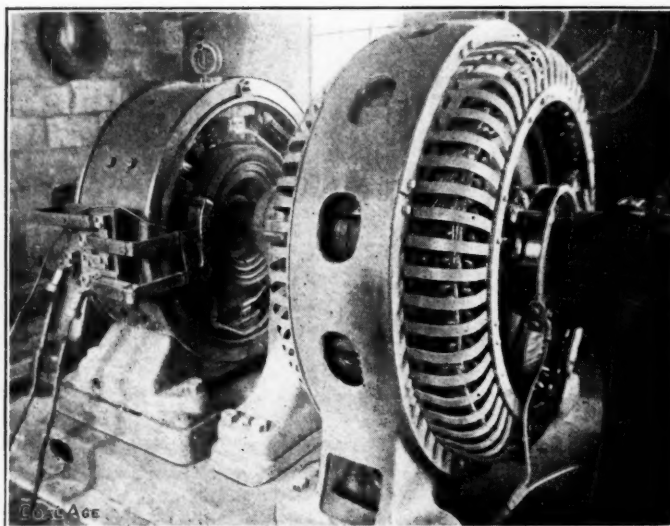
Table 2 shows the condition of the bituminous industry in 1909. Per cents. shown in the last column would apply to the conditions of today. These figures indicate the increase in seven years dating from 1902 to 1909.

TABLE No. 2. CENSUS ANALYSIS OF THE BITUMINOUS COAL INDUSTRY—ALL COAL COMPANIES

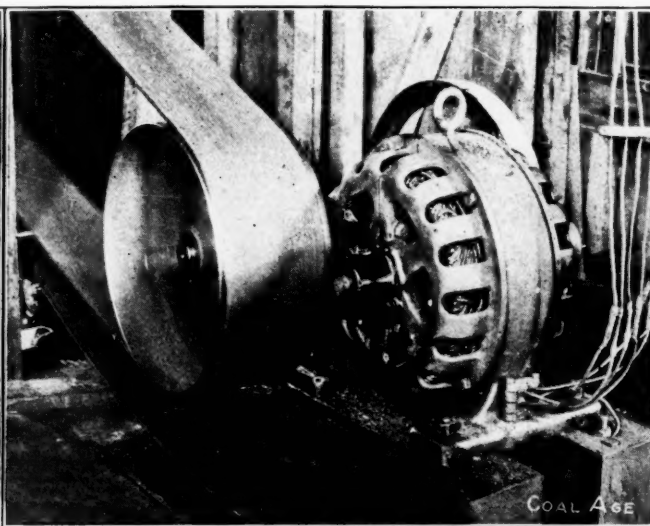
No.	Item	1902	1909	Per cent. Increase in 7 years
1	Number of companies.....	4,409	3,503	-20.3
2	Number of mines.....	5,652	6,013	6.4
3	Total capital.....	\$440,800,000	\$1,062,197,083	141.
4	Primary horsepower.....	521,165	1,227,401	135
5	Number of wage earners.....	280,638	569,789	103
6	Wages.....	\$181,482,288	\$294,196,488	62
7	Number salaried employees.....	19,871	22,800	14.7
8	Salaries.....	\$14,511,924	\$21,800,895	50
9	Miscellaneous expenses.....	\$16,774,459	\$29,691,324	77
10	Cost of supplies.....	\$24,798,922	\$48,000,000	94
11	Contract work.....	\$1,244,114	\$2,207,672	77
12	Quantity coal mined (tons).....	260,216,844	379,744,257	45
13	Value of product.....	\$290,858,483	\$405,486,777	39

* Note—Includes royalties and rent of mines, taxes, office rent and sundry expenses.

Table 2 shows that the number of companies (item 1) decreased 20.3%. This does not mean that competition decreased. The next item (2) shows that the number of mines increased 6.4%. These figures indicate that the companies become larger and stronger. This is borne out by the next item (3) which shows that the total capital increased 141%. Some readers may consider that a large portion of the increased capitalization was water. However, the next item (4), Primary Horsepower, shows that this is not the case. For instance, the primary horsepower increased 135%. This means that the capacity of the power plants had to be increased this



100-Kw. SYNCHRONOUS MOTOR-GENERATOR SET



A 15-Hp. ALTERNATING-CURRENT MOTOR DRIVING A FAN

amount, due to the installation of new and heavier equipment in and around the mine. The new machinery must have required the expenditure of a considerable portion of the new capital. All the remaining items in this table show a material increase.

Table 3 shows more clearly how the cost to mine coal has increased. It is an analysis of the preceding one and contains the same items worked out upon a per ton basis.

TABLE No. 3. ANALYSIS SHOWING AVERAGES UPON PER TON BASIS.

No.	Item	1902	1909	Per cent. Increase in 7 Years
1	Number of tons coal mined....	260,216,844	379,744,257	45
2	Capital.....	\$1.695	\$2.80	65.3
3	Contract work.....	\$0.00478	\$0.00583	21.9
4	Number of wage earners.....	0.00107	0.0015	40.3
5	Number of salaried employees.....	0.0000764	0.0000602	-21.2
6	Primary horsepower.....	0.002	0.00324	62
7	Wages.....	\$0.697	\$0.775	11.2
8	Salaries.....	\$0.0558	\$0.0575	3.4
9	Cost of supplies.....	\$0.095	\$0.126	32.6
10	Miscellaneous Expenses*.....	\$0.0643	\$0.0785	22
11	Value of Product.....	\$1.115	\$1.07	-3.9

* Item No. 10 includes royalties, rent of mines, taxes, office rent and sundry expenses.

Table No. 3 shows most conclusively that the cost per ton of coal mined has increased and that the profits have decreased. For instance, in 1902, the average selling price per ton was \$1.115 and the average operating cost to mine coal was \$0.912, leaving a profit of 20.3c. In 1909, the average selling price was \$1.07 and the average cost \$1.037, leaving a profit of only 3.3c. per ton.

These operating costs do not include all the fixed charges. They include only the cost of wages, salaries, supplies and miscellaneous expenses. The item, miscellaneous expenses, includes royalties, rent of mines, taxes, office rent and sundry expenses.

Contract Work (item 3) is given to show the amount of new development work done.

The increase in capital (item 2) per ton of coal mined is interesting. This shows an increase of 65.3% in seven years. It shows that the mine operators are continually spending money for equipment and improvements which they anticipate will reduce the cost of mining. In 1902, there was \$1.695 capital invested for every ton of coal mined per year. In 1909, this had increased to a sum of \$2.80 for every ton of coal mined per year. If the economies anticipated by the operators, had worked out, the other items of expense in the column under 1909, would

have been reduced, instead, each item of expense shows an increase.

From the foregoing it is seen that the capital account has reached such proportions, that the future profits must be obtained through greater output and greater economies in the operation of the workings, and the investment must be kept down to a minimum.

A RAPID EVOLUTION IS IN PROGRESS

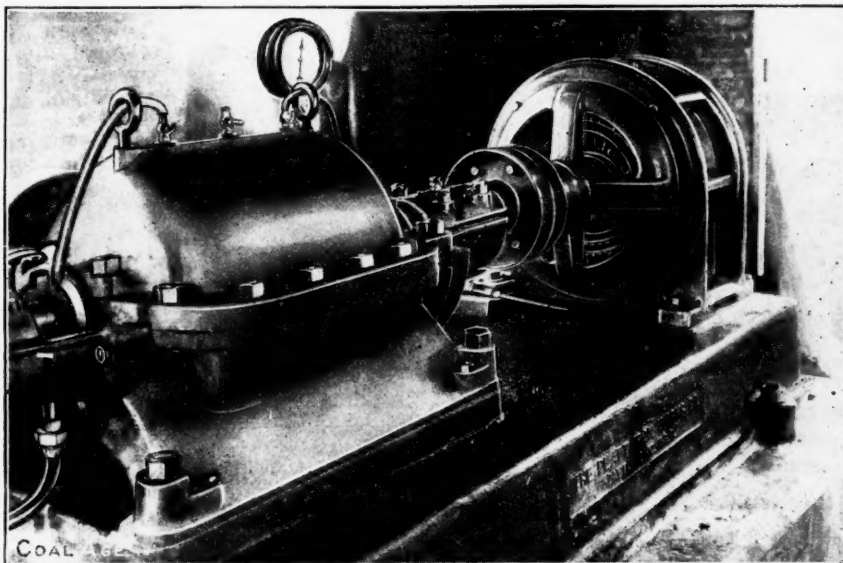
The coal-mining industry is undergoing a rapid evolution. It was only a few years ago when mining coal was strictly a mining proposition. Coal was dug entirely by manual labor and hauled by mules. Today almost 50% of the entire production is mined by machinery and hauled by locomotives. The industry is now becoming a combination of both a mining and a power proposition.

After the mine operators had gone to the expense for mining machinery, etc., the cost to produce coal should have been reduced. However, the new order of things brought about conditions of its own, which, in most cases, increased the cost of production.

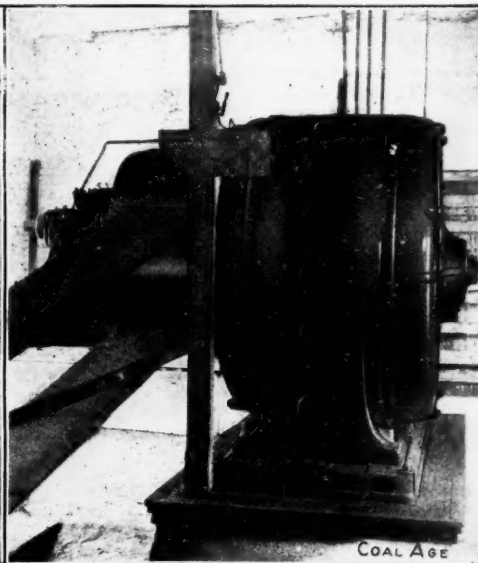
The profits in the future depend in a great measure upon the solution of these new problems. They offer the greatest of opportunities to effect economies. These opportunities exist in almost every working. This does not indicate that the man in charge is negligent. A mine superintendent is essentially a miner. He has been selected by the management because of his practical knowledge on mining coal. Power is entirely out of his line. The production of power, its proper distribution and its use in a mine, requires the work of those who have made the subject a special study, in other words, specialists.

In the past, the operators have made it a general practice to install isolated power plants and generate their own current. However, today a large number of these plants have since been abandoned and the operators are now buying electricity from the nearest power company. Many of the new workings opened up during the past few years are operating entirely from purchased power.

It seems somewhat inconsistent to think that a central station can afford to buy coal, pay freight and then sell the current produced back to the coal mine. Nevertheless, this is the case; furthermore, the operators are in



A 35-Hp. Motor Driving a 330-Gal. Centrifugal Pump



A 200-Hp. Motor Driving a Mine Fan

many cases finding it cheaper than producing their own power.

One of the principal advantages of central-station service is that it allows extensions to be made and more mining machinery to be added without making expensive additions to a power plant.

This can best be explained by citing the case of a certain coal company. This experience will most undoubtedly be similar to that gone through by many readers. These men opened up their workings eight years ago and invested \$18,000 in a power plant. They anticipated that this installation would meet their requirements for years to come. They increased their tonnage to such an amount that three years ago they found it necessary to increase the capacity of the power house. This required an additional investment of \$14,000. They then had a total of \$32,000 invested in the power plant and believed that this equipment would be ample for their needs for years.

They extended their workings such distances that it soon became a problem to deliver electricity at proper voltages. At times the quantity of coal mined was considerably less than it should have been, due to this one difficulty. Early this spring they decided to make further additions to the power plant to take care of the new conditions before them. The changes contemplated would cost \$18,000—this would make a total of \$50,000 invested in power-generating equipment.

After studying the matter thoroughly these men decided to purchase their power from the local central station. The necessary investment would be much less than that required for power-plant extensions; also since making the change they find it considerably cheaper than their former power costs.

HOW CONDITIONS MAY BE MET

To meet the conditions arising due to an increase in the power requirements, is oftentimes a most perplexing problem. The solution may lie in any one of the following three plans:

1. By increasing the capacity of the present installation.
2. By building an entirely new, modern power plant,

3. By purchasing central-station current.

To decide which plan to adopt requires considerable study. The operator should first determine the following details with the present plant.

1. The maximum demand for power per ton of coal mined.
2. The quantity of power required per ton of coal mined.
3. The cost for power per ton of coal mined.

There are always certain parts of the load that remain fairly constant irrespective of the quantity of coal produced, such as that required for ventilation, pumping, lighting, etc. The information on the first two details should be obtained separately so as to show the demand and the quantity of power required by this part of the load, and that required for mining, haulage, etc.

With this information as a working basis, the plan to adopt can be decided upon by determining which alternative offers the most economical operation with a minimum investment and at the same time allows for future growth.

PURCHASED POWER IS USUALLY CHEAPER

When an analysis is made, such as outlined in the foregoing, it will, in almost every instance, result in favor of purchased power. This, of course, is assuming that the rates are such as usually quoted by the power companies. Table 4 is given to support this statement. The information in this table was obtained from actual tests in 40 mines located in Pennsylvania, West Virginia and Ohio. Each case, excepting mines Nos. 24, 36, 37 and 40, shows that purchased power is cheaper.

The table is divided into groups according to the size of units and contains data on both steam and gas engines. The groups are arranged as follows:

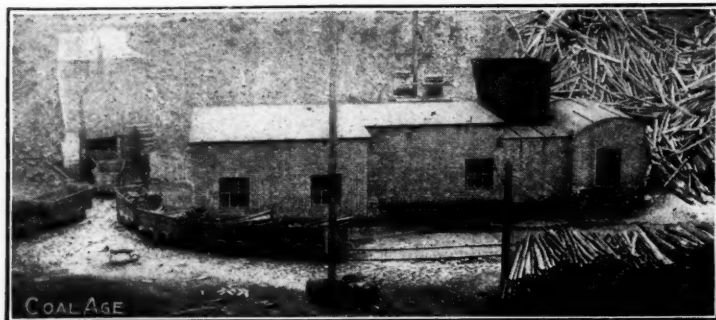
Group (A)	Steam Engines—50 hp. and under.
" (B)	" " " " 51 to 100 hp.
" (C)	" " " " 101 to 200 hp.
" (D)	Gas " " " 101 to 200 hp.
" (E)	Steam " " " 201 to 500 hp.
" (F)	Gas " " " 201 to 500 hp.
" (G)	Steam " " " 501 to 1000 hp.
" (H)	Gas " " " 1001 hp. and over
" (I)	Steam " " " 1001 hp. and over

Columns 8, 9 and 10 show the cost per horsepower-hour and the savings effected if power were purchased at a given rate. The savings are shown in cents and also

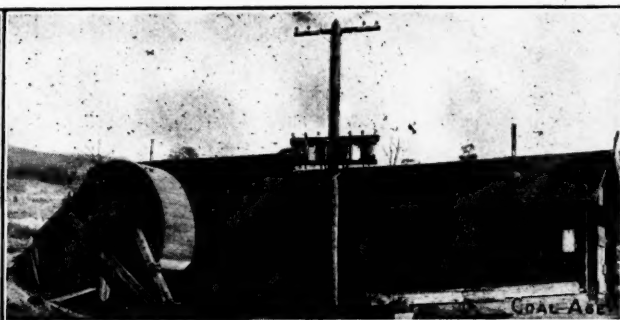
upon a percentage basis. The rate used for central-station power is figured at \$15 per kilowatt per year for the maximum demand and 1c. per kilowatt-hour for the current consumed. On a horsepower basis this rate would be \$11.20 per horsepower maximum demand plus 0.746c.

Column 2 shows the price the operators charged themselves for fuel; 75-c. indicates the price charged was 75c. per ton for coal; 4-g. indicates that the company used natural gas at 4c. per 1000 cu.ft.

It seems to be common practice among many operators



AN ELECTRICALLY DRIVEN FAN, SHOWING SIZE OF FAN HOUSE



SUBSTITUTING ELECTRICITY FOR STEAM.
NOTE IDLE EXHAUST PIPE

per horsepower-hour. All the details in the table are worked out upon a horsepower-hour basis.

TABLE No. 4. COMPARATIVE COST OF POWER, ISOLATED PLANT VS. PURCHASED POWER, IN BITUMINOUS COAL MINES

1	2	Isolated Plant Power			7	Purchased Power		
		3	4	5		8	9	10
No. of Mine	Price of Fuel	Hp. of Engine	Max. Demand	Per Cent. Load Factor	Hp.-hr. Consumed per Year	Cost per Hp.-hr., Cents	Rate \$11.20 per Hp. + 0.746c. Hp.-hr.	Saving per Hp.-hr., Cents
		Group A. Steam Engines to 50 Hp.						
1	\$0.75-c	50	60	22	96,500	2.7	1.41	1.29
		Group B. Steam Engines from 51 to 100 Hp.						
2	\$0.75-c	75	70	25.7	169,000	2.6	1.20	1.40
		Group C. Steam Engines from 101 to 200 Hp.						
3	\$0.75-c	180	200	50	79,000	1.40	1.02	0.38
4	0.75-c	180	160	19	300,000	2.40	1.34	1.06
5	0.75-c	200	285	24	421,000	2.20	1.50	0.70
		Average cost				2.00	1.28	0.72
		Group D. Gas Engines from 101 to 200 Hp.						
6	\$0.04-g	130	150	20	228,000	2.50	1.48	1.02
7	0.04-g	130	150	22	251,000	2.40	1.41	0.99
8	0.04-g	150	90	22	289,000	2.00	1.09	0.91
		Average cost				2.30	1.32	0.98
		Group E. Steam Engines from 201 to 500 Hp.						
9	\$0.75-c	225	300	30	593,000	1.50	1.31	0.19
10	0.75-c	250	175	15	328,000	2.00	1.34	0.66
11	0.75-c	260	280	19	434,000	3.00	1.47	1.53
12	0.75-c	300	150	17	445,000	2.30	1.12	1.18
13	0.75-c	300	320	31	815,000	1.90	1.18	0.72
14	0.75-c	300	300	50	1,312,000	1.40	1.00	0.40
15	0.75-c	300	375	50	1,318,000	1.30	1.06	0.24
16	0.70-c	300	300	39	1,024,000	1.30	1.07	0.23
17	0.75-c	300	160	13	342,000	2.00	1.26	0.74
18	0.75-c	300	325	24	632,000	1.90	1.32	0.58
19	0.75-c	325	300	45	1,283,000	1.40	1.01	0.39
20	0.75-c	340	375	41	1,224,000	1.20	1.09	0.11
21	0.75-c	350	400	31	950,000	1.50	1.21	0.29
22	0.75-c	350	400	31	951,000	1.40	1.21	0.19
23	1.50-c	350	350	17	522,000	2.90	1.49	1.41
24	0.75-c	400	450	18	632,000	1.00	1.54	0.54
25	0.75-c	400	180	16	562,000	2.20	1.10	1.10
26	0.75-c	400	425	12	422,000	2.80	1.86	0.94
27	0.75-c	450	400	21	830,000	1.90	1.28	0.62
28	0.75-c	480	375	19	800,000	1.30	1.27	0.03
29	0.75-c	500	350	16	700,000	1.60	1.30	0.30
30	0.75-c	500	450	39	1,710,000	1.30	1.04	0.26
31	0.75-c	500	500	18	790,000	1.60	1.45	0.15
		Average cost				1.77	1.26	0.50
		Group F. Gas Engines from 201 to 500 Hp.						
32	\$0.04-g	300	250	17	447,000	2.00	1.37	0.63
		Group G. Steam Engines from 501 to 1000 Hp.						
33	\$0.75-c	575	650	31	1,562,000	1.50	1.20	0.30
34	0.55-c	600	625	12	631,000	2.50	1.85	0.65
35	0.75-c	700	700	26	1,595,000	1.30	1.24	0.06
36	0.75-c	950	900	65	5,420,000	0.90	0.932	0.032
		Average cost				1.55	1.30	0.25
		Group H. Gas Engines over 1000 Hp.						
37	\$0.05-g	1500	1500	24	3,160,000	1.10	1.27	0.17
38	0.05-g	1500	1500	24	3,160,000	1.40	1.27	0.13
39	0.05-g	1700	1500	24	3,680,000	1.40	1.20	0.20
		Average cost				1.30	1.24	0.06
		Group I. Steam Engines over 1000 Hp.						
40	\$0.75-c	1800	2000	18	2,840,000	1.20	1.53	0.33
		Average for all mines				2.13	1.32	0.81

*Note—These quantities are negative and show an increase of cost by the purchase of power.

to charge themselves at the rate of 75c. per ton for the coal used for power purposes. As a matter of fact it costs them whatever price it would bring in the market. Again, many operators insist that they use slack and refuse from the mine, fuel which for the most part, is unsalable. A visit to many of the boiler rooms shows that by far the greater number of them are using run of mine.

FOUR PER CENT. OF OUTPUT IS BURNED

Very few operators appreciate the quantity of coal they consume for power purposes in proportion to their total output. Table 5 gives these details. The last column shows the percentage of coal used for this purpose in proportion to the total production. It also shows that this is steadily increasing. For instance, in 1911 the operators used 3.9% of their total output to generate power. Can an operator afford to consume practically 4% of his total production for power purposes?

TABLE No. 5. COAL CONSUMED AT THE MINES FOR POWER PURPOSES.

Item	Year	Total Quantity Mined	Quantity Consumed at Mine for Power	
			No. Tons	Per cent. of Total Quantity
1	1890	111,302,322	3,580,214	3.2
2	1895	135,118,193	4,673,577	3.46
3	1900	212,316,112	7,260,899	3.42
4	1905	315,062,785	11,275,864	3.56
5	1910	417,111,142	15,362,518	3.66
6	1911	405,757,101	15,935,564	3.90

It will be but a matter of a few years when the greater number of coal mines will be operated from central stations. To illustrate the trend of the times—the Virginia Power Co., a \$10,000,000 incorporation in the New River District was developed because of the opportunities existing there in the coal field.

The West Penn Electric Co. connected the first coal mine on their lines in 1896—a load of 120 hp. Today it has contracts with the mine operators aggregating over 20,000 hp., and anticipates that this will exceed 30,000 hp. before the closing of the year.

Another point worth mentioning is that the total capital of all the power companies exceeds \$2,500,000,000. This amount is 2.35 times greater than the total capital of all coal companies. Again, the central station companies' income from the sale of electricity for power purposes increased 746% during the last 10 years. This shows how power users are adopting purchased current.

EDITORIALS

Power for Coal Mining

We print, upon another page, an article by A. E. Rickards, entitled, "Does Bituminous Mining Pay?" Aside from the facts, figures and comparisons brought out in this paper, all of which are well worthy of careful consideration by mining men, there are others which are perhaps equally potent, although less lucidly revealed.

In speaking of the increased amount of power employed to secure coal, the author says in part:

The industry is now becoming a combination of both a mining and a power proposition. . . . The profits in the future depend in a great measure upon the solution of these new problems. They offer the greatest of opportunities to effect economies. These opportunities exist at almost every working. This does not indicate that the man in charge is negligent. A mine superintendent is essentially a miner. He has been selected by the management because of his practical knowledge on mining coal. Power is entirely out of his line. The production of power, its proper distribution and its use in a mine requires the work of those who have made the subject a special study, in other words, specialists. . . . It seems inconsistent to think that a central station can afford to buy coal, pay freight, and then sell the current produced back to the coal mine.

This is an age of economic production. So far as power is concerned, this involves large units, carefully planned power plants and scientific operation.

Few, indeed, are the men who thoroughly master two professions. As pointed out by Mr. Rickards, in most cases the successful mine superintendent is a "practical" man. He has probably grown up in the mines and knows from alpha to omega the ins and outs to be observed in the removal of coal from the earth. In short, he is a thorough specialist in his line.

It is nearly as rare to find a man who can economically produce coal and at the same time efficiently produce power therefrom as it is to meet a farmer who can successfully raise large crops of grain and cheaply and safely navigate the vessel that transports them over sea. Yet it is no more of a discredit to the practical mining man that he does not understand the theory of combustion, or the thermodynamics of heat engines, than it is to the farmer that he may not be versed in spherical trigonometry, or the science of navigation.

There are mining companies, and not a few of them, who are today generating energy in their own plants cheaper than any power company can supply current to them. Immediately beside these mines, however, may be located others that find it decidedly to their advantage to purchase current from an outside source. Whence, then, comes this difference in economic policy under identical conditions of mining?

As has been stated above, economic production of power requires large units, advantageously placed and carefully handled. This not only means a demand for a heavy power output but requires the services of one or more specialists, either mechanical or electrical or both. The small user of power cannot, in the nature of things, produce current as cheaply as either the large consumer or the central power company.

Other things being equal, the one place on earth where power may be developed from coal with the least possible expense is at the mine's mouth. The only reason why the central station, making its current from the consumption of fuel, can furnish power cheaper than the mining company is able to do, is that the former makes economies in power generation which the latter either cannot or does not attempt.

As pointed out by Mr. Rickards, coal mining today is a dual business, requiring not only the production of fuel but the scientific generation, distribution and utilization of power. At the present time there is not only an opportunity but a positive need—not necessarily a demand—in the coal field for mechanical and electrical engineers who are as truly specialists in their line as a superintendent is in his. In many cases, such men, if given a free hand, would be able to effect vast economies in the power expense of coal production, even though they might be woefully ignorant or the minutiae of mining and be guilty of that cardinal sin, in the eyes of many a so called "practical" mining man, of never having hurled imprecations upon the head of a mine mule.

✱

An Interesting Question for Discussion

There is probably no element that lends itself more effectively to the development of safe and economic mining than that of the discussion of mining subjects. The experiences of intelligent mine workers, briefly narrated, not only make interesting reading, but are of untold value to readers who are themselves working in the same or other districts. The experiences of men working in gaseous mines and localities is often a revelation to those employed in districts where gas is not known.

We have received this week an important inquiry from a mine worker in the Northwest in reference to starting the fan after an explosion. This question presents a broad field for discussion; it considers the conflict and doubt that exist in the minds of those in charge, immediately after a great explosion, when all is uncertainty, and sentiment and duty run riot in the mind.

In this connection, we recall the words of Sir Thomas Holland, commenting on the tragic death of Mine Inspector W. H. Pickering and quoted in COAL AGE, Aug. 9, p. 203: "The deeds of men are worth more than lives; through their death the spirit of the race lives." The occasion was the explosion in the Cadeby Main colliery, July 9, 1912, in the report of which Chief Mine Inspector Redmayne described the conditions immediately after the explosion as "A race with death."

We hope this discussion will be treated in the broad spirit that it deserves by men who have experienced such moments of doubt and uncertainty when the lives of fellow mine workers were at stake, and all depended on the action of those left in charge. Let the best advice available be given to guide and control those who may be called to similar experiences in the future.

Star-Chamber Methods

The medical profession has been exposed from the earliest days to the criticism of a public unable as a whole to do justice to those whom it would judge. This is true also of other professions, but it must be conceded that the "medicos" have resented such outside criticism more fiercely than any other people, and we think with no greater reason.

This attitude, strange to say, is most obvious in the more competent medical men; the more marked their talents, the more anxious they seem to disguise what they do not know and the more they scheme to screen themselves from the protests of the laymen.

In some recent first-aid meets, the judges have published no demerit list, have announced no percentage markings, have made absolutely no criticisms. They have limited themselves solely to declaring the names of the winners of first and second places.

By this method they have in a way safeguarded their honor at the expense of their usefulness. But the credit of themselves and their order is nothing to the world at large. Their first duty is to care for human life and health and when self-sacrifice is required, to their credit be it said, they recognize the paramount call of humanity. A first-aid man recently stated to us that the doctors were neglecting their duty in not criticizing first-aid work at public meets, for the men who make mistakes in the field will repeat them in the mine. It may not be necessary for purposes of *examination* to reveal the mistakes of the examined, but it is essential to call attention to them if those men are going to perpetrate the same follies in a mine heading or room which they have committed on the drill field.

Let it not be thought that laying themselves open to criticism by an expression of opinion, will degrade the physicians in the eyes of the public. It is true that they will sometimes err, and sometimes criticism will be fierce and unjust, but on the whole, they will gain by coming into the open.

We could leave two blank pages, week by week, to represent the profundities of editorial thought. Many slips, erring judgments, half-lights, snap decisions would doubtless be saved to the public and many a time we should be spared the foolish attacks of people who had given less consideration to the matters at issue than we had expended ourselves. But every week we deliver our judgments, expose ourselves to the line of fire and accept the criticisms openly made or secretly uttered by our readers, and are not either provoked or injured thereby.

We were glad to see that at Gibson, N. M., where in true Western way, men are men and professional dignity is an unknown quality, the judges declared what mistakes were made, laid themselves open to charges of lax judgment and false conclusion and accordingly really did good work.

At other meets we have seen men unrebuked who tried to resuscitate a victim by forcing his arms into the sod, his friends apparently hoping to revive him not by reducing and dilating his chest cavity but by forcing in the insensate ribs of Mother Earth.

The first-aid men are learning fast; they will not patiently accept all that is taught them and discussion will be helpful to teacher and scholar. We believe that first-aid will make more rapid strides here than it has

made in England or on the European continent, because the teaching of physiology in the public schools and the discussion of medical subjects in even nontechnical papers has prepared the American people for an intelligent consideration of first aid.

We have unlearned the false modesty of Europe and if our school training has been at times conducted in an incompetent manner and has become hazy with the passing years, there yet remains a nucleus from which great results may spring. The study of physiology in public schools in this country which already is 25 years old, has given the first-aid men of the United States a considerable advantage over the students of the St. John and St. Andrew Ambulance Associations of Great Britain, the illustrious prototypes of American first-aid organizations.

✱

A Home-Made Expansion Joint

On long steam or air-pipe lines, especially if the work is of a temporary nature, the question of adequate expansion joints is sometimes puzzling. This is especially true where the line is continuous and has no bends or changes of grade.

If no provision is made in a pipe line for expansion and contraction, it is almost certain to do damage, either from breaking its connections, or, as is sometimes the case, actually moving or displacing the machinery to which it is attached.

A makeshift expansion joint can be easily made from three short nipples, two long nipples and six screwed elbows. As ordinarily constructed this puts an offset in the pipe equal to the length of the three short nipples and the six elbows.

Another similar contrivance can be made with two short nipples, one long nipple and four elbows. This, however, necessitates an offset in the pipe equal to the length of the long nipple plus two elbows.

Of course, such an arrangement as has been described is not to be compared with such an expansion joint as a double offset U-bend, but, on the other hand, it can be made easily and is much cheaper. It is also fairly satisfactory, even when considerable expansion must be accommodated.

✱

Collapsible Stoppings

The question of the efficacy of collapsible stoppings has recently been brought forward, in a paper by Dr. J. J. Rutledge, mining engineer of the Bureau of Mines, now located in Oklahoma. It is argued that the building of light stoppings in entries will prove effective in localizing an explosion of gas or dust, by permitting the free expansion of the gases of the initial explosion, owing to the destruction of these light stoppings by the blast.

The question is a broad one in its bearing on mining practice and is open to argument, on both sides. We would like to ask, however: "Has the Bureau of Mines made sufficient experimentation along this line, and have the results of such experiments been sufficiently satisfactory to warrant advocating the practical application of this theory in coal mining. The question is a good one for discussion, as it admits of arguments on both sides; and we hope that mining men will give their experience and recommendation in regard to such practice.

LEGAL DEPARTMENT

When is Delivery to the Carrier, a Delivery to the Buyer?

BY A. L. H. STREET*

In instances when a contract to sell coal or other commodity, to be shipped to the buyer, does not fix a place for delivery, the law ordinarily regards delivery to a railway company, or other carrier, for transportation to the purchaser, as a delivery to him, especially if he has designated a particular carrier. The question as to when title passes to the buyer usually arises when the freight is lost or injured in transit, in determining to whom the carrier is liable, and whether the seller is entitled to recover the contract price, notwithstanding the loss or injury. Application of the legal principle above stated, with its important qualifications, is illustrated by the following summary of appellate court decisions, including holdings in cases which arose in the coal trade.

The general rule is that coal is "shipped" when it is put on board the car or vessel in which it is to be carried, and that an agreement to deliver coal f.o.b. is satisfied, and title passes to the purchaser, and the coal is at his risk, when fuel of the quality and quantity called for by the contract is loaded for shipment. (*Massachusetts Supreme Judicial Court, 84 Northeastern Reporter 1020; 80 Northeastern Reporter 236.*) An important exception to this rule is that title to a shipment does not pass to the buyer until the price is paid, on delivery to the carrier designated by the buyer, where the contract calls for payment on delivery. (*70 Pacific Reporter 1080.*)

The ordinary effect of a purchase of coal "f.o.b. mines" is declared by the United States Circuit Court of Appeals to pass title on delivery of the coal to the carrier. (*172 Federal Reporter 113.*) In the last cited case, it was further held that the fact that sellers shipped coal in their own name did not necessarily show an intent to retain title after delivery to the carrier. Under a contract by a mining company to sell coal to a customer to be delivered on cars at the mines each month, carload lots, which the company loaded and directed a railway company to carry to the purchaser, must be regarded as having been delivered to the customer, as between him and the mining company, though the railway company refused to transport the coal, appropriating it to its own use (*United States Circuit Court of Appeals, 141 Federal Reporter 617*); the buyer's remedy being against the railway company.

It is not necessary that the bill of lading be sent the buyer, in order that delivery to the carrier be constructive delivery to him. (*96 Southwestern Reporter 188.*)

THE SELLER IS NOT LIABLE FOR DELAY IN DELIVERY

The seller is not liable, of course, for any delay in actual delivery by the carrier to the buyer, in a case where delivery to the carrier is constructive delivery to

the buyer. (Case last cited.) Though, in such cases, a theory of agency of the carrier for the buyer arises, there is no such agency as makes the buyer liable to the seller for a misdelivery made by the carrier. (*43 Southeastern Reporter 715.*)

When coal was sold for delivery on board a vessel provided by the buyer, it was held that the seller's right to recover the price was not affected by a proceeding brought by the master of the vessel for demurrage. (*Maryland Court of Appeals, 24 Atlantic Reporter 420.*)

Fuel was sold for delivery at Burlington, N. J., and was carried there in a barge selected by the seller. The shipment arrived at the buyer's wharf too late in the day for unloading, and, during the following night, the barge sank. On these facts, the New Jersey Supreme Court of Errors and Appeals held that, unless the loss was caused by a defective condition of the wharf, it must fall on the seller, who was responsible for the condition of the barge and the manner in which it was handled, until the buyer had reasonable time in which to inspect and remove the coal. (*23 Atlantic Reporter 686.*)

Under a contract to ship coal from Belleville, Ill., mines via a certain railroad, the parties knowing that St. Louis was the nearest point to which that line extended, delivery to the only carrier to which delivery could be made was held by the Kansas City Court of Appeals to constitute delivery to the buyer. (*120 Southwestern Reporter 658.*)

When a buyer agreed to furnish vessels to carry coal to be delivered thereon by the seller in monthly installments of 2500 tons each, it was decided that there was no delivery of any part of an installment until the whole was loaded; and, in another case, it was held that under a contract to sell a full boatload of coal slack, title to the fuel did not pass to the buyer as fast as the slack was put in the boat in the course of filling it. (*33 Federal Reporter 552.*)

WHEN SHIPMENT IS CONSIGNED IN NAME OF SELLER

If the seller consigns the shipment in his own name, he is presumed to have intended to retain title in himself, and, on loss of the freight in transit, will not be heard to say that delivery to the carrier was delivery to the buyer; and, according to a decision of the Nebraska Supreme Court, prepayment of freight charges warrants an inference that the seller intended to reserve title pending transportation, though it was also held, in the same case, that the mere fact that the seller agreed to see the shipment f.o.b. at the buyer's place of business did not retain title in the seller after delivery to the carrier; that agreement being treated only as a promise to pay the freight charges to the destination. (*74 Northwestern Reporter 670.*)

Under shipments to the shipper's order, delivery to the carrier is not delivery to the buyer, unless the bill of lading is delivered to the latter. (*39 Southern Reporter 722.*)

*Counselor at law, St. Paul, Minn.

SOCIOLOGICAL DEPARTMENT

Lehigh Valley Coal Co. Meet

SPECIAL CORRESPONDENCE

The second annual first-aid contest among the champion teams of the six divisions of the Lehigh Valley Coal Co. was held at Hazle Park, Hazleton, on Saturday, Sept. 13. Over five hundred employees of the company were in attendance. The principal prize was a large, handsome gold-lined loving cup, which was awarded to the Packer No. 5 Inside Corps last year. This cup is to be awarded year by year until some corps has won it three times, when it will become the permanent property of that team. In addition to this prize, the company will send the winning team and the two men who made the best scores in the one-man event, to the American Mining Congress, in Philadelphia, in October, the men to be the guests of the company and to represent it in the contests.

The divisions were represented by the following teams, all of which had demonstrated their fitness for the honor in a series of preliminary contests: Lackawanna division, Westmoreland colliery; Wyoming division, Franklin colliery; Lehigh & Coxe division, Deringer No. 1 slope; Mahanoy & Shamokin division, Packer No. 5 colliery; Delano division, Primrose colliery; Pottsville division, Blackwood tunnel. Doctor Lathrop, of the Hazleton State Hospital, and Doctor Shafer, of Kingston, were

can be judged from the scores made by the other teams; Franklin, $97\frac{3}{8}$; Packer No. 5, $97\frac{1}{8}$; Westmoreland, $96\frac{7}{8}$; Primrose, $96\frac{3}{4}$; Blackwood tunnel, $96\frac{1}{2}$. The one-man event was won also by the captain of the Deringer team, Simon Fellin, with a score of 99. Captains Morris, of Westmoreland, and O'Neill, of Franklin, tied for second in this contest with a score of 98. Since the captain of the winning team was also the winner in the one-man event, and the two other men were tied for second



FIRST-AID TEAM FROM DERINGER NO. 1 SLOPE.
WINNERS OF THE CONTEST



CAPTAINS OF FIRST-AID TEAMS



DOCTORS JUDGING FRANKLIN TEAM

judges, with Atherton Bowen, of Wilkes-Barre, as field chief.

The events were as follows:

Two-man contest. Compound fracture of right arm midway between shoulder and elbow; severe laceration of back of left hand and fingers.

Three-man contest. Simple fracture of nose, punctured wound of left eye, and simple fracture of left collarbone.

Four-man contest. Severe burns of face, neck and shoulders; patient suffering from shock; left hand and forearm slightly burned. Full-team event. After a fall of rock, the patient is found with the following injuries: Simple fracture of right forearm, both bones; severe cut in palm of right hand, bleeding in jets; simple fracture of left thigh just below the hips.

One-man event. Patient is found with a severe cut on the right temple, unconscious in bad air. The air 50 ft. away is good. Use contents of first-aid package only.

The Deringer team won the cup and the trip, with a percentage of $97\frac{1}{2}$, but the closeness of the competition

place, Mr. Bowen, in behalf of General Manager Chase, of the Lehigh Valley Coal Co., announced that Messrs. Morris and O'Neill would both accompany the Deringer team to the Philadelphia meeting.

After the second contest, an excellent dinner was served by J. J. Becker, of Wilkes-Barre. Among the prominent men present at the meet were General Manager F. M. Chase, mining superintendent Thomas Thomas, general manager A. B. Jessup, of the Markle Coal Co., division superintendents W. D. Owens, J. H. Haertter, W. H. Davies, Thomas R. Jones and G. P. Troutman.

The competing corps were composed of the following men: Westmoreland, James H. Morris, captain, Edward Reap, Thomas Ridgely, Walter Jacoby, Joseph Johnson, Fred Halpin, subject.

Franklin, John O'Neill, captain, Edgar Boston, William Morgan, Harry Thomas, Hugh Owens.

Deringer No. 1 Slope, Simon Fellin, captain, Joseph Fellin, Henry Poncari, Isaac Morgan, Leon Poncari, Thomas Gibson, subject.

Primrose, Anthony Gluding, captain, Henry O'Donnell, Joseph Maher, Daniel Lewis, Joseph Blum, Daniel Jenkins, subject.

Blackwood Tunnel, Williams Adams, captain, Ray Clemens, Ralph Parr, Henry Krise, John Rhoads, John Lipsback, subject.

Packer No. 5 Shaft, John McLain, captain, Charles Calvert, Joseph Kerwin, Henry Carey, John Sheridan, Thomas Brown, subject.

The penalties enforced in the contest were those recommended by the American Mine Safety Association at its first meeting with an additional count entailing 5 demerits for improper bandaging.

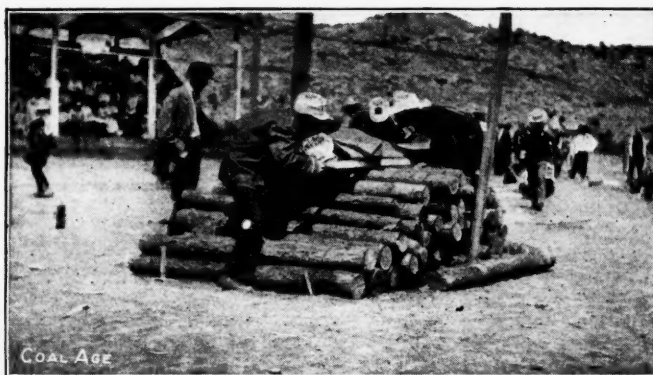
The penalties enforced in the contest were those recommended by the American Mine Safety Association at its first meeting, with an additional count entailing 5 demerits for improper bandaging.

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Gibson First-Aid Contest

BY TRACY GARRETT*

Only three points separated, the four teams in the second annual first-aid contest of the Victor-American Fuel Co.'s New Mexico division. The meet was held Aug. 17, and was probably one of the most successful ever held in New Mexico. The amphitheater of the company's athletic park, where the contest was held, was crowded, not only with the employees of the company and their families, but with the Atchinson, Topeka & Santa Fé Ry.



WEAVER MINE TEAM WHICH RECEIVED CUP

(Team lifting injured man over props representing a fall. Ropes mark roof of entry.)



NAVAJO TEAM OF JAPANESE

(All the men are from Japan except the captain. Team tied with that of Heaton for second place.)

Co.'s men, brought by Agent Purdy, of Gallup, to witness the events.

The judges were C. S. Stevenson and A. A. Flynn, from the U. S. Bureau of Mines mine-safety car, which happened to be at Gibson at the time. State Mine Inspector Beddow served as time keeper. The government men were enthusiastic in praise of the work done by all of the competing teams and, in making the award of a handsome silver loving cup, presented by the Victor-American Fuel Co., Mr. Stevenson called attention to the closeness of the score and to the difficulty in making the decision.

Four teams competed, representing the Weaver, Heaton, Navajo and Bartlett mines. The final standing of the teams was: Weaver, 93; Navajo and Heaton tied with 92, and Bartlett 91. Each of the mines was represented by a team captain and four men. An interesting feature was the Navajo team, composed entirely of Japanese miners, with the mine boss as captain. Several

*Gibson, New Mexico.

devices were adopted to make conditions resemble those in the mines. Ropes were stretched at the correct level to represent the roof of an entry. Mine props were placed in a pile and in one event the injured man was carried over these while boards were erected to represent low places.

The following are the events in which the teams participated:

Event No. 1—Man has been overcome by gas in a low place and has become unconscious. Drag him 10 ft. to a higher place, carry him 50 ft. to good air, administer artificial respiration for one minute. Time allowed 6 min. In this event Bartlett and Navajo were tied with 95 and Weaver and Heaton with 90. Penalties were imposed for failure to treat for shock and for using wrongful methods of inducing respiration.

Event 2. Full team to treat and place on improvised stretcher a victim having compound fractures of right lower leg and of left forearm. Bartlett and Heaton tied with 95 on this event, each being slightly penalized for loose bandaging. Navajo obtained a score of 90 and Weaver 85, a penalty being charged against the latter for the captain's failure to command his team properly.

Event 3. A victim has suffered a simple fracture of the right thigh. Team to treat his injury, put him on stretcher, carry him 50 ft. over obstacles and through a low place and put him into an ambulance. Time allowance, 10 min. In carrying him over obstacles, tests for gas were required. The Weaver team had a perfect score, Heaton and Navajo were awarded a score of 90 and Bartlett 85.

Event 4. A victim has had his back broken. Team to make splints, put him on stretcher and carry him 50 ft. Time allowed, 8 min. Weaver, Heaton and Navajo tied with 90 and

Bartlett was given a score of 85. In this event the judges required the improvised splints to be placed on end to see if the patient slipped and in no case was any movement noted.

Event 5. Victim's right leg is practically crushed off 4 in. below the knee. Team to treat bleeding and fracture and laceration of palm of left hand, and to put man on stretcher. Time allowed, 8 min. Weaver again secured a perfect score and Bartlett, Navajo and Heaton were awarded 95 each. Failure to pad and failure to provide sling were the chief charges against teams in this event.

In each event all teams were under the time limit. In treating for shock, the Navajo team introduced potash cans from the helmet outfits to keep the patient warm. The other teams used safety lamps. The only material permitted was that found in the first-aid outfits kept in the mines.

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The Shamokin Meet

The account of the meet at Edgewood Park, Shamokin, Penn., will be fully described in our Safety Number, Oct. 4. About 2500 guests attended the meeting and the work of the teams showed a considerable improvement over that of even last year. This fact caused widespread favorable comment.

DISCUSSION BY READERS

Building a Mine Overcast

A short time ago, I saw an article describing an automatic fireproof overcast, *COAL AGE*, Aug. 30, p. 297. Speaking of overcasts, permit me to describe what I consider a cheap and extra-strong overcast, which can be constructed of worn-out railroad iron.

Having secured the material needed, the work is performed as follows: The roof rock is first blasted down, at the point of the entry where the overcast is to be located. When this has been done and there is sufficient room for constructing the overcast, two walls are first built, one on each side of the roadway, parallel with the entry and across the air course. These walls may be built of concrete, brick or masonry, as desired. They should be set back in the air course, a few feet from the entry, and hitches should be cut into the rib to accommodate the ends of the walls. The purpose of this is that if the coal forming the rib slacks or breaks off it will not leave the ends of the walls exposed, but a permanently air-tight joint can thus be formed between the walls and the coal. The top of this wall is but a few inches below the floor of the overcast; and its height should be sufficient to give ample head room on the haulage road.

When these walls are finished, the railroad iron is brought to the place, and the rails are laid, one by one, side by side on the walls, each rail resting on its base on top of the walls so as to span the haulage road.

Bricks laid flat are now slid from the ends of the rails into position between the rails. There is plenty of room for the bricks between the head and base of the rails. The rails should be laid the proper distance apart that the bricks can be slid into this space either endwise or sideways, as desired; but, in the latter case, the rails must be laid exactly the length of a brick apart. The bricks are now thoroughly cemented in place with cement mortar, and the floor is completed by covering the rails and bricks with a sufficient thickness of the mortar.

Sidewalls are then built on this floor, parallel to the air crossing and across the haulage road. These walls are carried only to such a height as to enable an air-tight joint to be made with the rockwalls forming the sides of the overcast. Small drain pipes should be built into the sidewalls of the haulage road to allow the drainage of any water that might otherwise collect behind these walls.

RALPH W. MAYER.

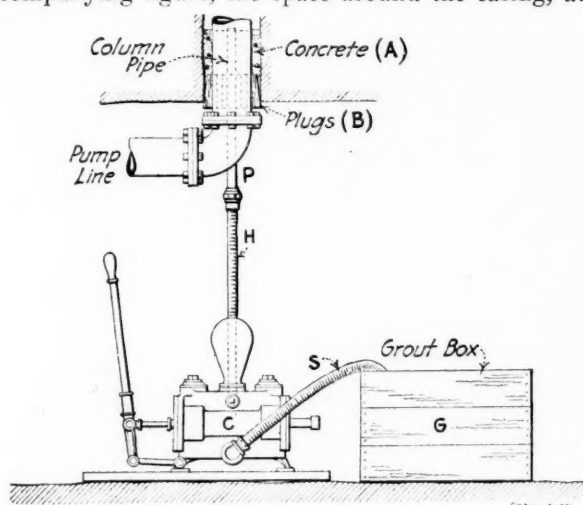
Roslyn, Wash.

Boreholes for Mine Drainage

I have seen numerous references to the use of boreholes for pumping water from isolated sections of mines. This method is frequently adopted in the mines in my district, and I have often found that the mine superintendents have experienced considerable trouble in trying to make the standpipe or casing tight. The general method for doing this is to plug the hole tight around the casing, at the bottom, with wooden plugs; and then

to pour cement grouting into the space surrounding the pipe, from the surface above. This method has generally proved unsatisfactory, owing to the air entrapped in the hole preventing the grouting from filling the space.

I want to suggest a method that I believe is simple and effective, for grouting the lower end of the pipe. By its use, a practically air-tight joint can be secured between the casing and the strata. Referring to the accompanying figure, the space around the casing, at the



GROUTING THE LOWER END OF BORE HOLE

bottom of the hole, is plugged with wooden plugs, in the usual manner. The grouting is made by mixing several sacks of good hydraulic cement with sufficient water, so that it will flow readily through the handpump shown in the figure. The grouting is mixed in the box (G), which is also shown, at the bottom of the drill hole. A short pipe (P), 1 or 1½ in. in diameter, connected to the discharge of the pump cylinder (C) by a flexible hose (H), is run up through the plugs (B) surrounding the casing. This pipe is extended from 18 in. to 2 ft. above the top of the plugs. Another short section of wire-wound suction hose (S) leads from the box to the pump and forms the avenue by which the grouting is drawn into the pump.

By this arrangement, the grouting is readily pumped from the box into the annular space (A), above the plugs and surrounding the pipe. When sufficient grouting has been pumped into this space, and while the pump is still in operation, the pipe is gradually withdrawn from the hole and a wooden plug quickly inserted in its place to prevent the grout from flowing out of the hole before it has set. After giving the grouting sufficient time to set, the borehole should be thoroughly grouted from the surface. If the best portland cement is used in preparing the grouting, there will be no trouble experienced by reason of leaky joints. I have seen several holes grouted, in a manner similar to that described, and none of these holes have given any trouble.

PENNSYLVANIA ENGINEER.

Stockdale, Penn.

Cleaning the Coal

I was interested in reading the article on "Cleaning Coal," by Josiah Keely, COAL AGE, Aug. 30, p. 296. In some districts, when the mines are running at full capacity, neither the operators nor customers are as particular about having the coal thoroughly cleaned by the miners, as when orders are scarce and the work is slack.

Since miners as well as operators are always anxious for steady work and like to have the mines run regularly, it seems to me it would be of advantage for the miner, sometimes, to see and to know the complaints that are made to the company by their customers. This might induce the miner to take more pains to clean his coal properly when loading his cars. If miners could see some of the letters that are received from customers, complaining of dirty coal, they might not be so anxious or ready to "slip one over" on the company, by the many practices known to them, such as breaking up and wetting the bone coal. In some mines this has been quite a common practice among a certain class of miners who do not seem to know or realize that, by so doing, they injure themselves and the company who employs them.

I have never seen such letters of complaint posted, but think the suggestion would be worth trying.

GEORGE N. LANTZ.

New Straitsville, Ohio.

Save the Timbers

I have noticed numerous references to the drawing of mine timbers, as the working faces advance; and was much interested in the letter by Charles Waine, on "Shooting Mine Timber," COAL AGE, Aug. 2, p. 171. The practice of shooting mine timber is a bad one, and should never be used where it is possible to draw the timbers and use them again.

My experience in buying the timber supply for mines has taught me how much can be saved by using the old timbers, many of which can be used two or three times, with proper care. The amount of timber ordinarily used in a mine employing, say 150 or 200 men, is very large. Now, if two-thirds of the timber used in such a mine can be used a second time and another portion a third time, it is easy to see that an immense saving can be effected. In some mines the timber bill is a large item, and if this can be reduced one-third or one-half by using the mine posts two or more times, it means a large reduction in the operating expense of the mine.

Every miner should be as much interested in saving the timber, which the company brings to his place free of charge and which enables him to protect himself while at work, as though its loss was his own.

JOHN SUTTON.

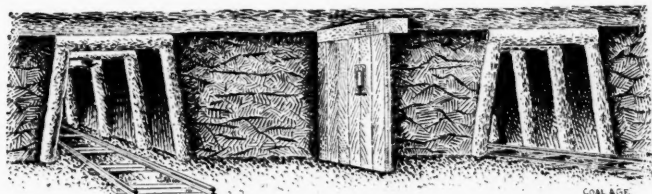
Terre Haute, Ind.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

The Water Gage in the Mine—As used in the mine, the reading of the water gage shows the difference of pressure between the intake and return airways, at the point where the reading is taken. The intake pressure is always greater than the return pressure and this excess or difference of pressure is what moves the air or creates the current. The use of the instrument is clearly shown in the accompanying figure, which shows two parallel airways going into



SHOWING POSITION OF WATER GAGE BETWEEN INTAKE AND RETURN AIRWAYS

the mine, one of these being the intake and the other the return airway of that section of the mine. It makes no difference on which side of the brattice the instrument is placed; the water will always be depressed in that arm of the gage which is open to the intake, because the pressure on the intake is always greater than that on the return airway.

What the Water Gage Shows—The water-gage reading indicates the ventilating pressure required to circulate the air, and is therefore equal to the resistance of the airways between the two points on the intake and the return; or, in other words, the resistance in by from the point of observation. The nearer this reading is taken to the head of a pair of entries, the closer it will approach zero, while at the next to the last crosscut it would be practically zero.

The use of the water gage in mining practice is of great importance. In connection with the observed velocity of the air, it shows the "power on the air" or the power producing the circulation. What is required in the practical ventilation of a mine is the production of the necessary velocity and volume of air, with the smallest expenditure of power. The most economical circulation is obtained when the required air volume is circulated by the least power, which means a comparatively low water gage.

The circulation of a comparatively large quantity of air under a low gage indicates ideal economic conditions, as far as the circulation is concerned. On the other hand, a small air volume and a comparatively high water gage shows a needless waste of power. In practice, an unusual reduction of the quantity of air passing in a mine or entry, accompanied by a similarly uncommon rise of gage pressure would indicate an obstruction of the airways.

The Coal Age Pocket Book

VELOCITY

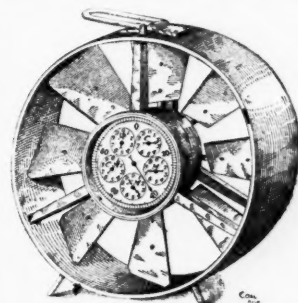
The velocity of the air current is one of the most important factors in the practice of mine ventilation. If the velocity of the air current is too low the ventilation of the mine is inefficient, as the air will not sweep away the accumulating gases from their lurking places in the mine. On the other hand, if the air moves with too great a velocity, not only do the workmen suffer inconvenience; but the high velocity of the current is often dangerous.

Danger of High Velocity—A rapid air current carries a great quantity of dust, and, by supplying large quantities of oxygen, maintains an unnecessarily active condition of the mine atmosphere that favors the ignition of the gas and dust. The high wind creates a draft that greatly intensifies the flame of lamps or of a blast of powder and increases the possibility of ignition.

How Velocity is Estimated—In mine ventilation the velocity of the ventilating current is commonly estimated in feet per minute, or feet per second.

How Velocity is Measured—A simple method of ascertaining, with more or less accuracy, the average velocity of the air current passing in an airway is to measure off a distance of, say 300 ft. along a straight portion of the airway; and note the exact time between the observed flash of powder at one end and the smell of smoke at the other end of this distance. The distance (300 ft.) divided by the time will give the velocity of the air in the center of the entry. The average velocity of the current may then be taken as $\frac{1}{3}$ of this observed velocity. For example, if the observed time is 30 sec., the center velocity is $300 \div 30 = 10$ ft. per sec.; and the average velocity $\frac{1}{3} \times 10 = 3\frac{1}{3}$ ft. per sec. or $3\frac{1}{3} \times 60 = 200$ ft. per min.

The Anemometer—The common method of measuring the velocity of the air in airways is by the use of the anemometer, which is shown in the accompanying figure. The dial hands record the number of revolutions of the vane. The instrument is so calibrated that each revolution of the vane corresponds to 1 ft. of air travel. The reading of the dial, therefore, shows the distance the air traveled during the time that the instrument was exposed to the current. Hence, this reading divided by the time of exposure, in minutes, will give the velocity of the current in feet per minute. A single revolution of the large hand corresponds to 100 revolutions of the vane. The small dials register the total reading.



THE ANEMOMETER

INQUIRIES OF GENERAL INTEREST

Starting Fan after Explosion

Assume that an explosion occurs in a mine generating large quantities of methane. The coal is highly inflammable and the mine dry and dusty. From the dry condition of the timber and the inflammability of the coal, it is highly probable that numerous small fires have been started by the explosion, in different parts of the mine. Suppose, moreover, that the ventilating fan is so badly damaged by the force of the blast, that it is necessary to make extensive repairs before it can be again started.

Under ordinary circumstances, dangerous quantities of gas will accumulate in different parts of the mine, during the time the fan is idle. There is, besides, now, the probability that carbon monoxide has been produced by the explosion. The amount of damage done in the mine and the condition of the stoppings, brattices, etc., are unknown and can only be surmised.

Under these conditions, would it be advisable to start the fan, after making the necessary repairs, without first ascertaining, as far as it may be possible, the condition of affairs underground? Would not the starting of the fan, without making a preliminary examination of the mine, incur the risk of a second and more disastrous explosion?

RALPH W. MAYER.

Roslyn, Wash.

While the question proposed by correspondent is practical, it assumes the worst condition that could possibly exist. No one familiar with the assumed conditions in this mine will deny for a moment that a second and more disastrous explosion is liable to occur, whether the fan is or is not started. It may be admitted, however, that the danger will be somewhat greater when the fan is first started. The question calls for the exercise of the best judgment by those in charge. If men are in the mine, the hope and possibility of rescue demand that a reasonable risk be assumed. On the other hand, the uncertainty of rescue as compared with the strong probability of further disaster may make any attempt to enter the mine at once, a foolhardy sacrifice of life. On such occasions, sentiment is strong, but good judgment aided by experience should rule.

In answer to the question asked, we would say if rescue work is to be attempted at once, it would be safer not to start the fan, but to organize a rescue party of experienced men equipped for entering a gaseous atmosphere. This would require the use of breathing apparatus and safety lamps. If it is found on investigation that further attempts at rescue are impracticable, all should withdraw from the mine and the fan should then be started, very slowly at first, so that the result can be closely watched. It would not probably be advisable, in that case, to make any attempt to enter the mine for several hours after starting the fan; but this can only be determined by the observed results. In any case, we would not advise a strong circulation of air. It must be remembered that the air current, for the most part, is probably only traversing the entries, and the volume of the

air should be gaged accordingly. The upcast current should be watched closely for any indication of fire below.

This question presents many phases worthy of discussion; and we hope to hear further from a large number of practical mining men who have had experience in rescue work and in the later investigation of mine explosions. Anyone of any heart realizes that it is a difficult matter to lay aside sentiment and to turn a deaf ear to the pleadings and demands of those whose only hope for the rescue of dear ones lies in the efforts of brave heroic souls who are willing to sacrifice even their own lives in a possibly forlorn hope of saving others. Let this question be thoroughly discussed.

✽

Fire on Intake

Some time ago a fire broke out in one of the old rooms, in the mine where I am employed. It was decided to seal off this fire and, to do this, it was necessary to build air-tight stoppings in the necks or mouths of five rooms.

When this work had progressed a few days, the company wanted coal for local trade and were desirous to have the miners go in and load this coal. In the meantime, the fire boss had reported fires on the third south-east entry as "giving off fumes;" but signed the book "O.K." The miners went into the mine, but had to come out again in less than an hour, because of the gas from the fire. Some of the men were sick and went to the doctor at once.

The mine committee, with the mine manager, mine examiner and superintendent then went into the mine to examine the firewalls that were built to seal off the fire and confine the gases. The committee were composed of old, practical miners, one of them an experienced gas man. They found stoppings that were built of concrete leaking badly at the top. The first of these showed a crack 2 in. wide and 8 ft. long, while the second showed a crack 1 in. wide and 10 ft. long. Smoke and gases were coming from both of these cracks.

The examiner's report showed a current of 2400 cu.ft. in the intake of this section, and 3000 cu.ft. in the return, an increase of 600 cu.ft. They still tried to get the miners to go in to work, claiming that the mine was safe and the gas given off would not hurt anyone. Normally, this mine registers about 30,000 cu.ft. of air at the foot of the downcast; but the air courses were, in places, in such shape that the miners had to crawl on their hands and knees to get through them. It was estimated by those working on the stoppings, that the top coal, 18 in. thick, was burning over a space 20 ft. wide and 20 ft. long.

Kindly state if this mine was operated in compliance with the mine law.

A MINER.

Farmersville, Ill.

The Illinois state mining law would not allow the operation of a mine under the conditions named above.

EXAMINATION QUESTIONS

Miscellaneous Questions

(Answered by Request)

Ques.—Give the names, symbols and specific gravities of the explosive gases found in the bituminous region of Pennsylvania. Where is each found and how produced? What is the effect of each gas on the health and safety of the workmen, and how can each be removed?

Ans.—The explosive mine gases commonly found in the bituminous mines are methane or marsh gas (CH_4), sp.gr., 0.559; carbon monoxide (CO), sp.gr., 0.967; hydrogen sulphide (H_2S), sp.gr., 1.1912; olefiant gas (C_2H_4), sp.gr., 0.978. All of these gases depend, for their explosive qualities, on the oxygen of the air.

Mine gases are generally found near where they are generated, except where the air current is insufficient for their dilution and removal and they are allowed to accumulate, in which case, those gases having a specific gravity greater than one, being heavier than air, as carbon dioxide and hydrogen sulphide, will be found at the floor or in other low places and in the dip workings of the mine. Those gases having a specific gravity less than one, being lighter than air, if allowed to accumulate, will be found in the roof or other high places and in the rise workings.

All the explosive gases are a menace to the safety of a mine, to a greater or less extent, methane and carbon monoxide being of the most importance, in this respect. Hydrogen sulphide and olefiant gas seldom occur in sufficient quantity, in a well ventilated mine, to be dangerous of themselves; but these gases increase the explosive condition of other gaseous mixtures, by lowering the point of ignition of the mixture and increasing the violence of its explosion when ignited. The same is true of carbon monoxide. Of the gases mentioned, carbon monoxide and hydrogen sulphide are poisonous to the human system. The gases may all be removed by a sufficient current of air properly directed and made to sweep the places where the gases are generated or accumulate.

Ques.—In mines where undercutting is done, would you adopt the same method of blasting the tight side of rooms and entries, in all thicknesses of coal seams? Explain fully.

Ans.—In mining a thick seam where the coal is undercut, it is common practice to put in what is called a "rib shot," to cut the tight side. The thickness of the seam gives such a shot greater opportunity to work and break the coal. In the mining of a thin seam, it is safer practice to blow down the center coal first, as a rib shot, in this case, would probably prove a very tight shot and might cause trouble by blowing the tamping. In any case, much will depend on the shooting quality of the coal.

Ques.—How should props be placed if the top is soft and the bottom hard?

Ans.—With a soft top and a hard bottom, a systematic method of timbering should be adopted, the props being stood in rows and long cap pieces used against the roof. The distance between the rows and the distance of the

posts apart will be determined by the character of the roof.

Ques.—In what position should a prop be stood in a flat seam in order to best resist the roof pressure?

Ans.—Post timbers, in a flat seam, should be set perpendicular to the roof and floor, unless some slip or other peculiarity of the roof formation makes it advisable to give the post a slight inclination to enable it better to support the tendency of the roof to slide or creep.

Ques.—How should a post be set in a moderately inclined seam?

Ans.—The post should be "upset" or given a slight inclination up the pitch, the amount the post is thus inclined to depend on the degree of the pitch of the seam. In this position, the tendency of the roof to slip downhill will act to tighten the post.

Ques.—How many gallons of water will a pump discharge that has a 14-in. cylinder, a 4-ft. stroke, and makes 200 strokes per minute? Find the discharge in gallons per minute.

Ans.—The sectional area of the pump cylinder is $0.7854 \times 14^2 = 153.96$, say, 154 sq.in. The piston travel is $200 \times 4 = 800$ ft. per min. The cylinder displacement, in this case, is $154 \times 800 \div 144 = 855 + \text{cu.ft.}$ per min. In practice, the water end of a pump is commonly assumed to have an efficiency of 85 per cent., making the actual discharge 85 per cent. of the cylinder displacement, or, in this case, $0.85 \times 855 \times 7.48 = 5436$ gal. per min.*

Ques.—How many mine cars would be required to operate a mine having an output of 1500 tons of mine-run coal, per day of eight hours; the cars having a capacity of 2 tons mine-run coal per car; and allowing a period of 2 hours' time for each car to be loaded, hauled to the tippie, emptied and returned to the working face?

Ans.—Allowing 2 hr. as the time required for a car to be hauled to the tippie, emptied and returned to the face, assumes that each car in the mine can make four trips daily, provided the coal is loaded promptly. This would then represent a tonnage of $1500 \div 4 = 375$ tons, carried to the tippie by the cars in 2 hr., each car making a single trip. The capacity of the mine cars being 2 tons each of mine-run coal, the number of cars required would be $375 \div 2 = 187.5$. Since there are always a certain number of cars laid up for repairs and otherwise idle, there should not be less than 200 cars provided for the operation of this mine.

Ques.—Name the different conditions under which you would advise the single-, in preference to the double-entry, system.

Ans.—The single-entry system should never be used, in the development of a mine of any size or importance. In case of a fall of roof in the rooms, which is liable to occur at any time, the circulation of air would be entirely blocked, in the use of the single-entry system.

*Note—The speed given for this pump is from six to eight times its normal speed. A pump of this size would ordinarily make from 30 to 40 strokes per minute, and probably discharge from 800 to 1000 gal. per min.

COAL AND COKE NEWS

Washington, D. C.

In amending the House draft of the tariff bill the Senate sitting in committee of the whole has inserted in that measure an important provision relating to coal. The provision consists of language including coal under certain conditions in the list of articles upon which the President is authorized to impose special duties for the purpose of retaliating against any country which may not accord to the products of the United States the equal and reciprocal treatment to which he believes they are entitled. A part of the general language preceding the coal paragraph and applicable to it which is now included in the draft of the bill is as follows:

That whenever the President shall ascertain as a fact that any country, dependency, colony, province, or other political subdivision of government imposes any restrictions, either in the way of tariff rates or provisions, trade or other regulations, charges or exactions, or in any other manner, directly or indirectly, upon the importations into or sale in such foreign country of any agricultural, manufactured, or other product of the United States, which unduly or unfairly discriminates against the United States or the products thereof; or whenever he shall ascertain as a fact that any such country, dependency, colony, province, or other political subdivision of government imposes any restriction or prohibition upon the exportation of any article to the United States which unduly or unfairly discriminates against the United States; or whenever he shall ascertain as a fact that any such country, dependency, colony, province, or other political subdivision of government does not accord to the products of the United States reciprocal and equal or equivalent treatment, he shall have the power and it shall be his duty to suspend by proclamation the operation of the provisions of this Act relative to the rates of duty to be assessed upon the importation of the following specified articles, or such of them as he may deem just and applicable, and to substitute therefor the rates of duty hereinafter prescribed upon such articles when imported directly or indirectly from such country, dependency, colony, province, or other political subdivision of government.

Following this comes the list of articles with reference to which retaliatory powers are given to the President. Coal is provided for in the following terms:

On coal, bituminous and shale, 45c. per ton of 28 bushels, 80 lb. to the bushel; coal slack or culm, such as will pass through a half-inch screen, and briquets of which coal and coal dust is the component part of chief value, 15c. per ton of 28 bushels, 80 lb. to the bushel.

And the President may provide for drawbacks for the refunding of the duty paid upon any such coal, culm or slack imported for the purpose of being used for fuel upon vessels propelled by steam and engaged in trade with foreign countries or between Atlantic and Pacific ports of the United States and which vessels are registered under the laws of the United States.

That whenever the President shall ascertain as a fact that such restriction or prohibition or lack of accord of reciprocal and equivalent treatment has ceased, he shall have the power and it shall be his duty to revoke such proclamation, whereupon the articles covered thereby, when imported from the place mentioned therein, shall pay the rates of duty otherwise provided by law. But this provision shall not be applicable beyond the period of three years after the date of the passage of this Act unless Congress shall otherwise prescribe.

West Virginia Hearings Are Concluded

The hearings have been concluded before the senate committee investigating the West Virginia coal strike situation at Paint Creek, but without developing much real additional information. The hearings held some time ago in the West Virginia district itself appear to have developed about all that the committee was able to bring out, and the recent testimony has been chiefly concerned with sustaining or rebutting the statements which were brought forward at that time.

It would seem that the materials in the hands of the committee three weeks ago have been but little added to, although there have been some interesting exhibits filed which may shortly be published. It is believed that a report on the situation may before long be made public, and this, it is supposed, will sharply take sides in regard to the matter. The exact content, of course, is not yet even tentatively known, but the prediction is strongly made in well informed quarters that there will be a sharp drift toward the side of the miners owing to the fact that several members of the committee have already indicated a strong bias in that direction.

That there will be any disposition in the Senate to take action of a definite kind based upon the findings of the committee is not generally believed, it being the view of most

of those who have looked over the ground that any positive action in the premises would be outside the power of Congress so that, if this be true, the report is nothing more than a shot in the air. The effect of the findings can in fact be expected to be little if any more than merely psychological.

HARRISBURG, PENN.

A most unusual step, attacking the legality of the method of making the valuations and assessments of coal property was taken by the Delaware, Lackawanna & Western R.R. Co., when its attorneys presented a bill in equity to Judge Fuller, of Luzerne, and asked for an injunction restraining a tax collector from collecting taxes based on an assessment made by county assessors and commissioners, without an examination of the property and without assistance from subordinate assessors.

The most important point in the suit will be that the county assessors and commissioners have no right to make assessments upon the recommendation of expert engineers, but that the valuations as placed by the district assessors are the figures to be used.

The outcome of this suit is being watched closely by all companies in the anthracite region, for should the Lackawanna Co. be sustained in its attack no doubt the other companies would take advantage of the decision and have new assessments made.

The Lackawanna Co. is represented by ex-Judge F. W. Wheaton, George R. Bedord, Andrew T. McClintock, A. L. Williams, ex-Judge B. R. Jones and D. R. Reese, who are counsel for all the big coal companies in the region.

Anti-Docking Law Is Not Observed

The miners in the lower field of the anthracite region are requesting the assistance of the district officials of the United Mine Workers as regards to the Lenker anti-docking bill, which was passed by the recent legislature. The provisions of the bill are not being carried out and docking is being continued. To this the miners are beginning to object.

They point to the fact that the coal companies have begun observance of the law placing a tax upon anthracite of 2½ per cent., which is charged on their checks for every ton of coal purchased. The item is marked "State Tax." They are much exercised that the companies are doing this and avoiding the provisions of the anti-docking bill.

In some of the mines a record is being kept of the number of cars docked and it is likely that a decision will be awaited whereupon claims will be entered for the amounts withheld.

At the present time the coal companies are preparing to fight payment of the tax upon all coal mined in the anthracite region, and the union officials have notified the membership to keep all the checks. This is for the purpose of demanding a return of all money if the contention of the coal companies is upheld by the courts.

At the meeting to be held shortly at Shenandoah the question of docking and the "check-off" will be thrashed out with President White. All those affected by the docking bill are standing behind the efforts of the union officials.

The Question of Railroad Passes

The Public Service Commission of Pennsylvania has decided that, for the present it will not require public-service companies to file tariffs or schedules with the commission, but will be satisfied with the posting of them in their offices and stations in the form required by the Interstate Commerce Commission. Companies not subject to the Interstate Commerce Commission will adopt similar forms of tariffs and schedules and publish and post them in their offices. All companies are required to keep a copy of each tariff or schedule in their principal office.

With respect to the applications now pending for the approval of contracts, the Public Service Commission will hold hearings in all cases on Oct. 8, of which due notice will be given by publication in the localities affected. General rules and regulations governing the making of applications, the publication of the time and place of hearing and the disposition of the applications are being promulgated by the commission.

The commission will not before Jan. 1, pass upon the question as to the right of railroad companies granting free

passes to their employees. The act creating the commission does not become effective until that time, and prior to the new year the commission has authority only to dispose of the unfinished business of the old Railroad Commission and to determine questions relating to contracts between utilities and municipalities.

The question of railroad passes has caused a stir throughout the state since the passage of the new Public Service law, as many who have studied the act are of the opinion that under its provisions railroad employees cannot be granted the courtesies which are now extended to them. This is of importance to the coal industry especially since many of the officials of the larger coal companies now receive railroad passes.

PENNSYLVANIA

Anthracite

Scranton—Subsidence of the surface, due to mining operations under the city still continues to be evident and in at least one instance, concrete piling has been resorted to, to prevent damage to buildings.

Mt. Carmel—Philip Hughes and Felix Crusinsky, assistant fire bosses at the Pennsylvania Colliery, were badly if not fatally burned Sept. 10 by an explosion of gas in a tunnel they were examining. The men were alone in the mine at the time. Hughes managed to find his way to the surface and summoned a rescuing party.

Pittston—At a recent fire drill at the Pennsylvania No. 6 Colliery, at Pittston, the 187 men and boys employed about the breaker and washery were out of the buildings and in the yard in one minute and ten seconds after the sounding of the alarm, and in two minutes and four seconds there were five lines of hose in active play, with a pressure of 140 lb. per sq. in. This was more than sufficient to carry the streams from the lower yard to the top of the breaker.

Shamokin—During the past week the Susquehanna Coal Co. opened the bath houses in the Shamokin district for the first time and the miners on coming out of the mines went under the showers and proceeded home looking like bank clerks.

Plymouth—The proposed proceedings of the Borough of Plymouth against the Plymouth Coal Co. to restrain the mining of coal was postponed by agreement, pending an investigation by mine inspectors, and 60 days was allowed for a thorough inspection of mining conditions in the borough.

Bituminous

Uniontown—Through a deal just completed, L. B. Hawkins, of New Castle, has sold to J. V. Thompson 100 acres of land in Greene County which is underlaid with coal. The land was sold at \$600 per acre. For several years past efforts have been made by the coal people to purchase the land, but it was not until this week that the deal was finally completed and the land disposed of.

Cresson—A number of coal operators have approached state authorities in an effort to purchase valuable coal holdings that underlie the new Tuberculosis Hospital at Cresson. The coal was formerly owned by Andrew Carnegie who deeded it to the state when he gave the large tract of land to the State of Pennsylvania for the erection of the new sanitarium.

Beaverdale—More than 200 miners employed by the Pennsylvania Coal and Coke Corporation struck recently because they allege the mine foreman discharged several men that he might employ others to do contract work. President Watkins is expected from New York to confer on the matter.

Boswell—A new mine opening said to be one of the largest shaft openings ever planned in the western part of the state is about to be started near here by the Consolidation Coal Mining Co.

Latrobe—Phillip Stump aged 65 years, night fire boss at the Atlantic mine of the Atlantic Crushed Coke Co. was found dead in the mine. The man was resting on a bench when death, due to heart failure, overtook him.

WEST VIRGINIA

Charleston—Alleging that the Paint Creek Colliery Co. had failed in its promise to dismiss a company physician employed during the recent labor trouble, 500 miners employed in and around Mucklow struck Sept. 12.

A unique and valuable feature of the first Fayette County fair, which will be held at Oak Hill, West Virginia, during the week of Oct. 6 to 11, will be one of the United States Government mine rescue cars equipped with all modern life-saving and rescuing apparatus for use in coal mines.

The differences between the miners and their employees at the works of the Seng Creek Coal Co. in the Coal River field were settled Sept. 10 by a conference between a committee of miners and the president of the company. By this settlement, the price for mining coal in the low veins is advanced from 26c. to 30c.

Bluefield—It is estimated that there are jobs for 2500 men in the Pocahontas region. It is impossible to get miners to perform the work necessary in filling the increased demand. Throughout this region, able-bodied men can earn from \$90 to \$125 a month or even more.

TENNESSEE

Isoline—The Clear Creek Coal & Lumber Co., of Isoline, Cumberland County, Tenn., recently filed a voluntary petition in bankruptcy, scheduling liabilities of \$70,000, with assets of the alleged value of \$212,000. The principal creditor is L. A. Pugh, who is trustee under a bond issue of \$50,000, secured by property listed at \$200,000. The company controls 6500 acres of coal and timber land in Cumberland County, encumbered by the trust deed referred to, as well as other property.

KENTUCKY

Jenkins—A survey of the Baltimore & Ohio is nearing completion from the Elkhorn Fuel Co.'s workings on Beaver creek to Jenkins, Ky., a distance of 35 miles, and it is said that a contract is to be let at once for the construction of the line. This road will be one of the heaviest pieces of railroad work in Eastern Kentucky.

Somerses—A recent fire at Somerset, Ky., did considerable damage to the town, the total loss amounting to \$20,000. The office of the Crain Coal Co. was among the business houses destroyed.

Hindman—The interests known as the Litts Syndicate are said to have bought up recently several thousand acres of rich coal and timber land lying along Carr's Fork, in Knott county, immediately beyond the Letcher county line, completing a tract of about 10,000 acres in that section under control of these interests. It is said that a branch of the Lexington & Eastern will be built up Carr's Fork a distance of 15 miles in order to reach the tract.

Middlesboro—The long-continued drouth in Bell County and southeastern Kentucky generally is reported to have forced a number of mines to cut down their operations to half-time, on account of their inability to secure sufficient water for their boilers. At one mine in the county it requires two days of pumping to secure sufficient water for half a day's operation. Recent rains have helped somewhat, and the season has now arrived when ample precipitation to relieve this condition may be expected.

OHIO

Columbus—Judge E. B. Kinkade, of the Court of Common Pleas in a decision handed down recently declined to interfere with the rates established by the Ohio Utilities Commission a year ago on Hocking Valley coal between Nelsonville and Toledo. The rate was cut by the Utilities Commission and the Hocking Valley R.R. Co. tried to have it rescinded. The railroad company contended that the rates established by the commission were unreasonable and unlawful as they did not allow the railroad company a fair profit.

The commission named by Governor Cox, of Ohio, to investigate conditions surrounding payment for coal mined, took a vacation during the past week. All of the members attended to their private affairs and have arranged to take up the work again next week. The commission spent a week investigating conditions in the Springfield district of Illinois and also met with a number of operators in Chicago. A day was spent at the docks of Milwaukee to see the condition of the coal as it comes off the freighters.

INDIANA

Terre Haute—Miners here have an understanding among themselves that if the train that takes them home each evening across the Wabash River is more than 20 minutes late they will not go to work next day. One day recently the crew was late. The railroad officials made satisfactory explanation to the miners, however, and they agreed to go back to work. Next morning 900 men filled the cars. The switching crew did not know of the arrangement and being delayed did not take the trouble to couple on to the waiting cars, believing that they were empty, and proceeded to the mines with a couple of cars the locomotive already had in tow. It will take the railroad commission to settle the trouble caused by the misunderstanding.

Seelyville—The Rosebud Mine of the Vandavia Coal Co. closed Sept. 10, throwing more than 250 men out of employ-

ment. Although all of the coal has not been removed, there is considerable danger in mining it.

ILLINOIS

Chicago—With only a few days remaining before they were expected to face trial on rebating charges, the O'Gara Coal Co., the Harrisburg Big Muddy Coal Co., and the Harrisburg Saline Collieries Co., filed a petition of insolvency and asked for receivers on Sept. 13. Judge Carpenter, to whom the application for a receiver was made, appointed Thos. J. O'Gara, president of the O'Gara Co., and Fred A. Busse, former mayor of Chicago, to take charge of the properties of the three companies.

Viriden—Two miners were seriously burned and another less severely in a gas explosion Sept. 8, in the mine of the Glenridge Coal Co. Some time ago a fire broke out in one of the entries, which was subsequently walled up to smother the flames. An attempt was made to open up the entry and get out a mining machine which had been walled in and the explosion followed.

O'Fallon—The record for hoisting coal in the St. Clair County field the past year is held by the St. Louis & O'Fallon Coal Co.'s No. 2 mine, where 4056 tons were hoisted in 6¾ hours, which is at the rate of 601 tons an hour. Failure to complete the eight-hour run was on account of no cars. During the past year the Suburban Railway handled the greatest amount of St. Clair County coal into East St. Louis, and St. Louis, the account being \$54,983 tons, the product of four mines. The St. Louis & O'Fallon R.R. hauled 848,704 tons from its two mines.

Taylorville—The miners employed in the No. 6 mine of the Springfield Coal Mining Co. went on strike Sept. 13, because of a dispute over the weighing of coal. The limit of 3500 lb. on each car was removed recently, since which time there has been more or less trouble over the weights. The difficulty is not regarded as serious, and it is expected that the men will soon return to work.

Springfield—At the present time the mines in this district are doing better than they have since early spring. Some of the coal companies are, however, advertising for more miners.

TEXAS

Bridgeport—The coal mines in this vicinity are now operating full time after two months of light running.

Slaton—A coal mine yielding lignite which was worked 33 years ago near Slaton, is to be opened up on a commercial scale, it is hoped, at an early date, by Colonel A. B. Robertson, owner of the famous "V" ranch, on whose land the mine is located.

COLORADO

Trinidad—John R. Loft has stated that the rumors of an immediate call for a strike in the southern Colorado coal fields were unfounded. He says the leaders of the union are optimistic and hope that the operators will meet the miners, and that a satisfactory agreement may be reached.

OREGON

Eugene—A bed of coal has been found in the hills three miles south of Eugene by H. A. Mitchell and E. G. Wilfert, who own a small tract of land there. Samples of the coal have been brought to Eugene and indicate a good quality. If investigations prove satisfactory, mining operations will follow.

Squaw Creek—Representatives of the U. S. Geological Survey have been in this field for the past six weeks, making an extensive examination of the coal in this section. This appears to be a promising coal field and awaits only transportation to make the fuel available. The field, which lies in the mountains 40 miles west of Grant Pass, is inaccessible at present, although a railroad has been surveyed through it. It is presumed that the promoters of the survey are the people who filed on the coal lands, as 9000 acres had been filed on before the lands were thrown into the national forest by former President Taft.

FOREIGN NEWS

Sydney, N. S.—The output of the Dominion Coal Co. for August amounted to 425,635 tons, as compared with 409,125 tons in the same period of 1912. The highest previous output was in October last, when 422,343 tons were mined. The output for the seven months previous to Sept. 1, 1913, was 2,720,765 tons, as compared with 2,533,283 tons last year, or an increase of 187,482 tons.

PERSONALS

Henry D. Jackson, consulting engineer, at 88 Broad St., Boston, sails Sept. 20 for Bermuda on a three months' trip for rest and recreation.

John Lynn has leased the Sherrill coal mine at Blanco Okla., and will engage in the coal business in a small way. He expects to work eight or ten men.

Morgan O. Morgans of Nesquehoning, for 12 years superintendent for the Lehigh Coal and Navigation Co. has resigned and accepted the superintendency of the Kaska William colliery at New Philadelphia.

Frank I. Pierce state mine inspector, of Indiana is delaying the completion of his investigation of the explosion in the mine of the Jackson Hill Coal Co. at Hymera where several men were injured, three of them since dying, until the survivors are able to testify.

Wayne Collier, manager of the Pan-American Coal Co., at Zanesville, Ohio, claims to be one of the luckiest men that ever lived. Recently he started out with two sacks containing \$2800 each on his motorcycle to pay the men at the mines and when he arrived at his destination he found both sacks gone. Stanley Kern, a pumper at the tube works, found the sacks and returned them to him.

CONSTRUCTION NEWS

Elkins, W. Va.—The Davis Colliery Co. is making a number of improvements in its already modern mining and coking plant at Coalton.

Erie, Penn.—The Bury Compressor Co. is just starting the erection of an addition to its plant, extending the main building 100 ft. This is necessary on account of increase in its business.

Fredericktown, Penn.—The finishing touches are being put on the new temporary tippie being constructed by the Fredericktown Coal & Coke Co., and within a short time the plant will be running coal.

Sturgis, Ky.—Among the new buildings to be erected and used by the West Kentucky Coal Co., at Sturgis, is a complete department store, which will be used as the company's commissary. Other buildings to take the place of those destroyed in a recent fire are well under way, and all will be completed before cold weather.

Salt Lake City, Utah—Development of the newly established coalfield in Southern Utah is being pushed with great rapidity by the American Fuel Co., of Salt Lake City, and hundreds of thousands of dollars are going into the work. The above mentioned company has developed its property at Neslen quietly but thoroughly, and this mine will soon become one of the big shippers of the state.

Bluefield, W. Va.—The Norfolk & Western R.R. is planning a branch line into Wyoming County to open up some valuable coal lands, which have already been leased. Several lines have been surveyed into Wyoming County, by the Norfolk & Western, the Chesapeake & Ohio and the Virginian, but it is expected the first mentioned will build a branch line leaving the main track at Davy, which will extend for about 20 miles or more into a comparative wilderness, thus giving access to a large area of coal and timber land.

Cabin Creek, W. Va.—The two-million-dollar power plant of the New River Development Co., now under construction upon Cabin Creek, is approximately two-thirds completed, and it is believed it will be finished within a month or two. While no transmission wires have yet been strung, the steel towers to which they will be attached are being erected, and this phase of the work is well under way. It is also contemplated to build a dam near Hinton and develop power from the waters of New River.

Harlan, Ky.—Mine operators and business men of Harlan, Ky., are said to be preparing to organize an independent telephone company, with a direct line connecting Middlesboro, Harlan and Pineville, unless the Cumberland Telephone & Telegraph Co. will extend its lines to the town shortly, as there is some prospect of its doing. The growth of the business interests of Harlan make adequate telephone service imperative, and a line will be built, either by the company or by the business men of the town.

Hazard, Ky.—The new Kentucky Block Coal Co. proposes

to lease the property of the Henry Coal & Coke Co., about two miles from Hazard, and to begin operations there at once. A 1000-ton plant will be built. J. B. Allen will have the active management of the operation, having resigned recently as chief engineer of the Slemo Coal Co. He expects to have coal moving shortly after the first of the year, with houses for the miners and other buildings completed. A sawmill will start work on the property at once, getting out lumber for various purposes in connection with the mine.

Sandusky, Ohio.—Dock improvements are to be made at Sandusky, O., and the work is announced to begin shortly. The Lower Lakes Dock Co., is planning an expenditure of \$1,000,000, which will include additional railroad sidings and an additional coal loading plant. The announcement of the improvements were made following the visit of Otto Schroll, Supt. of the Toledo division of the Pennsylvania R.R. Co., to Sandusky. The proposed improvements are designed to give the Pennsylvania better facilities for handling coal shipped from southern Ohio and West Virginia mines. The contract for the improvement has been awarded to the Great Lakes Dredge & Dock Co.

Panther, W. Va.—The Lathrop Coal Co. has let a contract to the Pittsburgh Coal Washer Co. for a large coal washer, the work of erection to be started at once. This washer will be used to remove all foreign substance from the slack. A contract has also been closed with John W. Doss, of Welch, to build 10 new houses for the miners, all to be thoroughly up-to-date; also to operate new sawmills for cutting timber upon the lease.

The Panther Coal Co., a new corporation that will be managed by the same officers as the Lathrop Coal Co., has applied for a charter and will operate a lease one-half mile east of the Panther Station. This company will be in operation in a short time, producing the same quality of coal as that mined by the Lathrop company. Work will be commenced at once on 50 houses, all of which will be thoroughly up-to-date.

NEW INCORPORATIONS

Idamay, Ky.—The Congleton Coal Co. has been incorporated with a capital of \$1500, and the incorporators are Lee, Hill and Tryce Congleton.

Hazard, Ky.—The Kentucky Bullock Coal Co., has been organized with a capital stock of \$30,000. The incorporators are J. B. Allen, M. M. Bullock and J. A. Roan.

Morgantown, Ky.—The Independent Coal Co., has been organized with a capital of \$1500. The incorporators are C. M. Sullivan, James W. Cook, and James F. Hope.

Coalton, Okla.—The Herron Coal Mining Co., has been organized at Coalton with a capital stock of \$20,000. The incorporators are W. F. Herron, W. P. Russell and George Arbaugh, all of Coalton.

Greencastle, Ind.—The Silver Ash Block Coal Co., has been organized to buy, sell and mine coal. The capital stock is \$25,000 and the incorporators are George W. Hanna, James E. Houck and John W. Stoner.

Nashville, Tenn.—The Royal-Ten Coal Co., of Knox County has been organized with a capital stock of \$25,000. The incorporators are H. M. Johnson, H. S. Pless, Ben. A. Morton, Ralph W. Brew and Joseph P. Grant.

Peru, Ind.—The Island Creek Lumber Co., of Island Creek, W. Va., has filed articles of incorporation here naming as directors J. O. Cole, Chas. C. Crane and E. C. Bears. The company has \$10,000 capital stock, and will open coal mines on land owned by Mr. Cole.

Philadelphia, Penn.—The L. P. S. Extraction Co. has been organized with a capital stock of \$120,000 to acquire, own and lease mines and mining rights of all kinds. The incorporators are George A. Perry, of Philadelphia, Penn. W. M. Hope, of Dover, Del., and others.

Des Moines, Ia.—Articles incorporating the McKay Coal Co. were filed Sept. 5 with the county recorder. The company is incorporated for \$4000 and will engage in a general fuel business in Des Moines. The incorporators are A. G. McKay, E. M. Gray, and Earnest C. Pond.

Elkins, W. Va.—The Limestone Railroad Co. is to mine and transport coal, limestone and other mineral. Capital stock \$15,000. Incorporators are R. B. Cody, E. M. Cody and E. A. Cody, of Buckhannon, W. Va., J. A. Isherwood, of Elkins, W. Va. and Robert Connell, of Washington, D. C.

Charleston, W. Va.—The Economy Splint Coal Co., of Charleston, W. Va., has been organized with a capital stock

of \$15,000 to produce coal. The incorporators are N. R. Hoge, of Sanderson, W. Va., T. G. Bush, of Quick, W. Va., Joseph Moore, J. M. Harris and Fred Burdett, of Charleston, W. Va.

INDUSTRIAL NEWS

Charleroi, Penn.—Improvements being made at Lock No. 4 on the Monongahela River are not interfering with the coal trade. During the month of August 16,807,000 bushels of coal were locked through. This is somewhat above the average.

Scranton, Penn.—The total shipments of anthracite coal from Pennsylvania in the month of August were 1,206,691 tons less than for the corresponding month in 1912. Last month, these shipments amounted to 5,369,900 tons as against 6,576,591 tons for the corresponding month of last year.

Peoria, Ill.—The Peoria Coal Club has signed a contract with the Illinois Merchants' & Manufacturers' Protective Association to do all its investigating for the coming year. Short weight, the credit of customers, etc., will be the work of the detective agency and two men have been appointed for this purpose.

Charleston, W. Va.—Over a million and a half tons of coal were shipped on the Chesapeake & Ohio R.R. from the Kanawha, New River and Kentucky districts during the month of August. The tonnages are as follows for the three districts:

Kanawha district coal 892,540 tons, coke 1980 tons. New River district coal, 537,490 tons, coke, 12,810 tons. Kentucky district coal, 195,300 tons, coke, 11,940 tons. This makes a total shipment of coal and coke of 1,652,062 tons.

Washington, D. C.—That the coal operators of Pennsylvania and Ohio took a hand in fomenting trouble and promoting the big strike in West Virginia in 1912 in order to more advantageously compete with West Virginia operators, was the sworn testimony before the Senate Investigating Committee on Sept. 9. A former Burns detective who went into West Virginia during the strike to investigate testified he received this information from a prominent man identified with Pennsylvania mining interests. He steadfastly refused to give the name of his informant.

Monongahela, Penn.—Representatives of a Uniontown syndicate headed by J. V. Thompson, are rapidly buying up all the virgin coal land that lies along Ten Mile Creek and in the vicinity of Hackney in Greene and Washington Counties. Agents of the syndicate have been at work for several months acquiring the property which is said to aggregate over 7000 acres, the prevailing price being approximately \$600 an acre. The same interests are also purchasing coal lands at Conger and Dunn Station. The farmers at these points, however, are holding out for higher prices and the likelihood is that they will get them.

Granite City, Ill.—A big increase in the output of coal in Madison County will be shown by the report of the county mine examiner to the board of supervisors. This will be the fourteenth annual report and each has shown a substantial gain over previous years. Twenty-seven mines are in operation and the output for the year was approximately four million tons. Practically all the coal was consumed by the industries of the county or sold to railroads for locomotives. Thirteen persons were killed in the mines during the year and approximately \$85,000 was paid by the miners for powder to blast the coal.

St. Louis, Mo.—One of the most important coal and railroad transactions made in this vicinity in a long time came to light a few days ago when it became known that the Manufacturers Ry. had bought the St. Louis & O'Fallon Ry., and had secured trackage rights over the Alton & Southern lines.

This came in the face of the fact that the Manufacturers Ry. was at this time supposed to be completing a deal with the various roads entering St. Louis, and working as the St. Louis Terminal lines to allow the Manufacturers road a working basis for the freight moved over its rails. With the announcement of the O'Fallon purchase came a letter withdrawing the proposed arrangement with the Terminal Ry.

It is understood that the Manufacturers Ry. will have a close working arrangement with the road now building by the Aluminum of America, which has under way work for the approaches to ferry slips on the east side of the river. The railroad owns property on the west side and in this way the Manufacturers Ry. has broke the Terminal control of the river crossing facilities, and threatens to become an important coal carrier to at least the local market.

COAL TRADE REVIEWS

GENERAL REVIEW

Bituminous operators again out of the market and tonnage difficult to obtain. Occasional congestion reported but the season is now sufficiently advanced to look for a hard situation at any time. Wholesale anthracite continues dull and mining still restricted.

The retail anthracite trade received a slight impetus during the week, due to the first appearance of colder weather. Greater activity is noticeable among dealers and consumers, but the movement is not of sufficient proportion to effect the wholesale situation. Mines continue working under curtailed production, and some of the smaller sizes are still going into storage. The most interesting development during the week was the recent announcement of a proposed increase in the water freights out of New York Harbor. The companies claim that this business has been done at a loss in the past and they are determined to eliminate all such unprofitable features of the trade.

Bituminous operators who were in the market a few weeks ago, have again withdrawn and the situation is notably stiffer. The short car supply is having a steadying influence while the spot market is stronger and the outlook even more perplexing. There is a particular scarcity of West Virginia grades and quotations are showing a strong tendency to increase on what little prompt coal is offered. The season has advanced to a point where a firm situation may develop very rapidly.

On the other hand, an occasional congestion is being reported, notably at Boston where there is more coal on vessels than can be unloaded and some of this will probably be on demurrage shortly. Again, prompt loading cannot be obtained on short notice at Hampton Roads, as was recently demonstrated when an attempt was made to divert vessels there from Baltimore; apparently shipments to tide are well sold in advance of their arrival. A record production is being made in the Pittsburgh region. The demand continues close up to the supply and prices are firm with prompt tonnages difficult to negotiate. Dealers are beginning to buy in preparation for the fall trade. Cars continue in fair supply, the greatest difficulty at the moment being the shortage of labor.

The effect of the heavy movement in Ohio is noticeable on the car supply although the situation is by no means serious as yet. The September circular is well maintained, domestic grades being particularly strong and the lake movement limited only by the supply of cars; the latter business is also being somewhat delayed by the difficulty in obtaining return cargoes at the upper-lake ports. The railroad yards at Hampton Roads are practically cleaned up due to a heavy dumping, principally for shipment into the New England trade; spot tonnage is difficult to obtain. The car supply is the principal feature in the Southern market, many mines being forced to reduce operations to one-third or one-half capacity; both steam coal and lump are improving.

The cooler weather has caused a tightening in the car situation in the Middle West and free coal is generally difficult to obtain. Some activity has developed in the retail trade and there is a disposition among coal men to speculate heavily on the prospects of a rising market this winter. Industrial conditions are improving and prices are some stiffer.

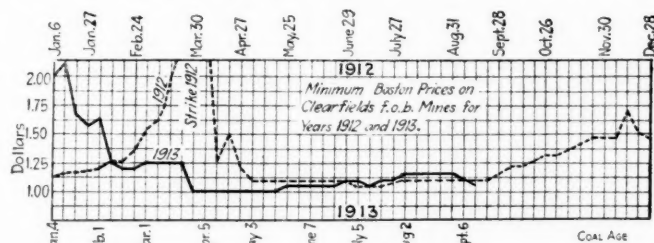
BOSTON, MASS.

Hampton Roads coals firmer, and the outlook more perplexing; receipts still heavy. Georges Creek in short supply. Signs of increasing demand for Pennsylvania grades. Barge rates on anthracite from New York to advance Oct. 1.

Bituminous—There is no material change in Pocahontas and New River, except that the spot market is even stronger than a week ago and the outlook for the next 60 days is, if anything, more perplexing. Orders are still plentiful and it is at least worth noting that steamers it was sought to divert from Baltimore were finally obliged to await their turn at that port because no agency at Hampton Roads could undertake prompt loading on short notice. In other words, coal is still being sold well in advance of its arrival at tide and it may be that this condition will prevail into the cold weather. Shippers who were putting coal on the

market here a fortnight ago now find themselves obliged to decline business that is offered, and as high as \$2.95 f.o.b. has been realized for the small orders that have lately come in.

Meanwhile Boston has more bituminous waiting discharging berths than has been the case for months and it is reported that some heavy demurrage will accrue before the harbor is clear of boats that have been held in the stream for two and three weeks. It is possible there will be a decided lull when these cargoes are added to the stocks already on hand but we cannot be so confident now that the market will ease off later. The season is at hand when a firm situation can develop very fast.



The shippers of the better grades from Pennsylvania have no difficulty keeping orders ahead of output. Prices fluctuate from day to day but there is a strong undertone. There are signs of an increasing demand for these coals, now that Pocahontas and New River seem so firmly established on a high-price level. For bunkering, in particular, the distributors here find a wider opening for reputable Pennsylvania coals on account of the demand from steamship owners for lower prices than can be made on coals from Hampton Roads. There is a better regard here for Pennsylvania coals of known origin than was formerly the case.

Water Freights are easy. Most of the coal moving this way is in steamers or in other tonnage that is under contract, so the current demand is rather light and at what are now considered minimum rates; 75c. is about the average from Norfolk on large vessels, with 10c. less to Providence.

Anthracite—It has been informally announced that effective, Oct. 1, certain anthracite carrying companies will advance barge freights, New York to Boston, from 50 and 55c. to 65 and 70c., making the circular price \$5.90 alongside for stove and egg. In March, 1912, the price was \$5.50 alongside, making a total advance of 40c. in less than two years, not counting the Pennsylvania state tax which some shippers are charging and others are not. Dealers are nevertheless taking supplies as fast as their storage will permit and the hard-coal trade is in excellent shape.

Quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*	\$1.10@1.50	\$1.35@1.65	\$1.67@1.77	
Philadelphia*	2.35@2.75	2.60@2.90	2.92@3.02	
New York*	2.65@3.00	2.90@3.20	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				\$2.85@2.95
Boston†				3.78@3.88
Providence†				3.93@4.10

NEW YORK

Bituminous market steady and well supported in spite of the rumored withdrawal of the railroad buyers. Anthracite continues dull and production restricted. Retail trade somewhat stimulated by a fall in temperature.

Bituminous—The withdrawal of a number of Eastern railroads from the market as reported last week, has failed to have any effect on the situation which continues firm in every respect. It is clear that whatever results were anticipated from this action on the part of the roads, the effect of their withdrawal from the market has been entirely discounted and coal continues to move as freely as at any time during the prevailing activity. It is anticipated that they will again be buying by Oct. 1; a great deal of difficulty was experienced last year in obtaining sufficient railroad fuel and it is probable that the roads will endeavor to better prepare themselves this winter.

One of the best features in the market is the obvious care which operators are taking to keep the production down within the limits of the demand. Indications point to a consistently strong market throughout the winter, with the producers so thoroughly in control of the situation, that they will be able to eliminate the possibility of a runaway market. Such a condition is very desirable since any abnormal inflation is invariably followed by a subsequent depression, more harmful in its effects than any temporary period of high prices. Conjectures are already being heard as to what effect the closing of the lake trade will have upon the market; this of course, always results in a temporary embarrassment in certain districts specializing on this business but it seems to remote at the present time to be considered. The bituminous market continues firm at former quotations as follows:

West Virginia steam, \$2.60@2.65; fair grades of Pennsylvania, \$2.70@2.75; good grades of Pennsylvania, \$2.80@2.85; best Miller Pennsylvania, \$3.10@3.20; George's Creek, \$3.15@3.25.

Anthracite—The appearance of some moderately cool weather has had a slightly stimulating effect upon the retail demand for hard coal, but without changing the wholesale situation. There are no reports as yet of any increase in the production in the mining regions, and the collieries are still working on part time. The companies are also stocking as liberally as before, notably pea and buckwheat grades. Stove continues in strongest demand. However, the change in weather has caused renewed interest in the market on the part of both dealers and consumers; inquiries are more numerous and a continuance of the low temperatures will see the winter trade under way somewhat earlier than is usually the case.

There is a noticeable tendency on the part of local agencies to confine their business entirely to old customers and in some instances to even withdraw from some of the outlying local markets. An example of this is found in an advance in local water freights particularly to Boston which, it is rumored, will be put into effect by a number of companies either Oct. 1, or Nov. 1. This increase will be from 50¢@55¢, up to 60¢@65¢, the latter figure having been put into effect in the early part of this year by one of the big local shippers. It is claimed that the water movement of hard coal by the large companies, has long been carried on at a loss. There are also other instances where unprofitable business is being dropped.

The local market has recorded some further advances during the week, and is now quotable on about the following basis:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken.....	\$5.00		\$4.95	
Egg.....	5.25	\$5.15@5.25	5.20	\$5.10@5.20
Stove.....	5.25	5.25	5.20	5.20
Chestnut.....	5.50	5.40@5.50	5.45	5.35@5.45
Pea.....	3.50	3.50@3.50	3.45	3.35@3.45
Buckwheat.....	2.75	2.60@2.75	2.45@2.70	2.35@2.70
Rice.....	2.25	2.25	1.95@2.20	1.80@2.20
Barley.....	1.75	1.75	1.70	1.40@1.70

PHILADELPHIA, PENN.

Anthracite trade is slowly becoming more active. Curtailed operations still continue but there are indications that full mining is likely to be resumed shortly. Bituminous market continues strong with demand good, and prices on about a parity with the week previous.

The first real cool snap of the season made its appearance early this week, and anxious eyes were turned toward the coal bin. The change, while temporary, at the same time it is likely to be the opening wedge for the fall business. It is rumored that most of the dealers, are not carrying such very heavy stocks of coal. Then again, it is not believed that the householders have much coal, carried over from last winter. It will be recalled that the winter of 1912 and 1913 was, comparatively speaking, a very mild one; and it is safe to assume that few consumers were compelled to renew their supplies, the early winter purchases carrying them over until spring. This is an unusual condition, as there is generally more or less coal carried over. This bears out the assertion made by many, that when the demand actually starts up, it will come with rush. Curtailed mining still continues although operators declare that full operations are likely to commence at any time. Dealers state that they are receiving numerous orders for deferred shipment, and when deliveries start, there will be more activity with the wholesalers.

In bituminous one hears of occasional orders being turned down, more on account of lack of ability to deliver, rather than because the prices were not acceptable. Some coals are even selling at slightly higher prices than was the case a week

or two ago, but that again resolves itself into a question of how bad the customer is pressed for tonnage. Tidewater deliveries are fairly heavy at the present time, with good prices prevailing. Quotations vary from \$1.25 to \$1.60 and better, at the mines.

PITTSBURGH, PENN.

Production at full capacity and prompt coal still difficult to obtain. Dealers buying more freely in preparation for the fall demand. Odd tonnages of coke being offered at concessions but the market generally firm.

Bituminous—More is heard of shortage of men than formerly, particularly from West Virginia fields, while car supply in the Pittsburgh district is fairly satisfactory, though short on a few divisions. Production and shipments are practically up to record rate. The approaching end of the lake shipping season has not produced any weakness in the market, regular prices being firmly maintained, while free coal is somewhat hard to find, although the demand is quite limited except from retail dealers. Many of the dealers failed to make contracts and are now increasing their purchases in the open market, providing for the fall demand from consumers. We continue to quote: Slack, 90c.; nut and slack, \$1.05; nut, \$1.25; mine-run, \$1.30; ¾-in., \$1.40; 1½-in. steam, \$1.50; 1½-in. domestic, \$1.55, per ton at mine, Pittsburgh district.

Connellsville Coke—The market has been very inactive since there were fair sized sales of furnace coke for September delivery. These sales were at \$2.50 with two or three possible exceptions. In the past week small lots of spot coke have been offered at concessions, down to \$2.35 or \$2.25, but there is question about the quality, and in any event no ordinary tonnages are offered below \$2.50, which the leading operators regard as the market. We quote: Prompt furnace, \$2.50; contract furnace, \$2.50; prompt foundry, \$2.90@3; contract foundry, \$2.90@3, per ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Sept. 6 at 369,459 tons, a decrease of 33,571 tons, and shipments at 371,270 tons, a decrease of 33,845 tons. The decrease was due probably to the holiday, and the previous week's figures had been correspondingly high, presumably in anticipation of same.

BALTIMORE, MD.

Growing car scarcity is tightening up the market again, although some low-grade coals are still comparatively cheap. Not a few mines are out of market, however, because they cannot get through more than enough to meet contracts.

The bituminous coal market is being again strengthened by a growing car scarcity. While the situation in Pennsylvania is not so bad, there have been days in West Virginia recently when the shortage has been acute. Some operating interests have reached a point where they refuse to sell any coal and are obliged to hustle to meet their contract obligations.

Where there was coal to offer in West Virginia, prices were as a rule a little better than the week previous. Unless the car situation improves rapidly the upward movement should continue. During the week run-of-mine was quotable in small lots at from 90 to 95c., and three-quarter sold around \$1.05 to \$1.10. Slack showed remarkable strength early in the week, because of the reduced screening and sold up to 95c.

There has been somewhat of an easing up in the movement to tide, although New England is still taking a fair quantity of coal. In the export business there should soon be a resumption of activity, as several important charters were announced for the week. Anthracite dealers are doing a fairly satisfactory business. There is no rush of fuel yet, as the yards are pretty well stocked. Many of the Pennsylvania coal cars that are ordinarily used in the anthracite trade are now in use in the soft coal districts.

Increased activity in shipping circles here recently is interesting the bunker supply trade. The port of Baltimore has shown a tremendous increase in its export and import business so far this year and many of the tramps that now come here are in the market for coal supply.

BUFFALO, N. Y.

Bituminous continues steady, but not quite so active. Car shortage becoming more and more noticeable. Demand close up to supply.

Bituminous—The most important change of front in the bituminous trade is in the car situation. It is not only agreed that they are growing scarcer, but the railroad officials state that the end is not very near. It is denied that the locomotive supply is short. At present the Pennsylvania, according to official statement, is delivering only about 75 per cent. of the required supply, though the Allegheny Valley mines appear to be faring somewhat better.

The fear that the closing of the lakes will develop a large amount of unsold coal is not so great as it was. The shipments in that trade are slowing down somewhat, but not on account of any natural falling off in demand or in any estimate that cuts down the apparent amount needed by the upper-lake consumers. Just as soon as the present cool weather becomes definitely established the former heavy shipments are expected to be resumed.

The fact is that the demand is so close up to the supply that there is no reason for predicting any great change in the situation. Not in the entire history of the bituminous trade has the summer demand been anything like what it has been this year, so that it is not to be expected that any decline will occur now just as the natural increase in consumption is at hand.

There is a steady growth in manufacturing in this vicinity, quite as much as has been the case at any former time and the domestic season is also now at hand. The iron consumption is good and business refuses to be disturbed by anything done or proposed by Congress.

Prices are therefore strong at \$2.90 for Pittsburgh lump, \$2.80 for three-quarter, \$2.65 for mine-run and \$2.15 for slack, with Allegheny Valley about 20c. lower.

Coke—While high-grade coke is a little firmer there is a decided weakness in the lower grades of furnace, which are selling in place of stock. Quotations are \$4.85 for best Connellsville foundry and \$3.85 for high-sulphur furnace.

Anthracite—The weather now favors a return of the demand for anthracite and there is some call for the purely domestic sizes, but it is hard to sell egg in any quantity and shippers will not consider the fall trade definitely opened till all sizes will sell. Pea and buckwheat are not active. It will be a hardship to take out all the available chestnut and stove sizes before anything will sell at all steadily. Lake shipments are heavy, though not quite as large as they were last month. More storage room in the only requirement. The weekly shipment by lake was 148,000 tons.

TOLEDO, OHIO

Car situation showing effects of the large movement. Lake trade heavy but vessels delayed at the upper lakes waiting cargoes. Cooler weather stimulating the demand.

No car shortage of consequence has as yet been noted on this market although shipments are not as prompt as they were earlier in the season. Some of the railroads are sending out warnings of an impending shortage and are making an appeal to shippers to use every precaution to prevent a congestion of cars. Hocking operators are refusing many orders and other roads coming into Toledo are demanding that customers accept a certain proportion of hopper cars.

Lake business continues active and is being pushed as rapidly as possible. The ore shipments are not as rapid as was the case earlier in the season and vessels which have been waiting around for ore loaders have been offered to grain shippers. It is stated that ships have been waiting at the head of the lakes for ore from two days to a week.

The demand for coal is a little brisker than it was because of the cooler weather. Steam grades are fairly active and the domestic trade is beginning to pick up. A little more cold weather will bring about considerable activity in the market generally. Prices are very firm here and there are no indications of a weakening anywhere along the line. Fine coal continues scarce and high in price.

Prices as quoted at Toledo are as follows:

	Poca- hontas	Hock- ing	Jack- son	Pome- roy	Mass- ilon	Pitts- No. 8	Cam- bridge
Domestic lump.....	\$2.50	\$1.75	\$2.50	\$2.00	\$2.50	\$1.35	\$1.35
Egg.....	2.50	1.35	2.50	1.50	2.50	....	....
Nut.....	2.00	1.25	2.25	1.75	2.50	....	....
lump.....	....	1.65	....	....	....	1.25	1.25
Mine-run.....	1.60	1.35	....	....	....	1.12	1.15
Slack.....	....	0.70	....	....	....	0.80	....

COLUMBUS, OHIO

The principal feature is the car situation which is curtailing production. In Eastern Ohio and Pomeroy Bend the shortage is marked and trouble being experienced in other fields. Prices are stiff and the demand strong for all sizes. Lake trade is still active.

The question of car supply is the principal factor in the coal trade in Ohio. Inability to furnish sufficient equipment has caused a lessening in production in many of the fields. The demand for all grades is good and the circular at the new level of Sept. 1 is well maintained. The tone of the market is satisfactory in every way.

The domestic demand is one of the best features of the trade. Retailers in all sections are placing orders and asking for prompt delivery if possible. Dealers stocks are not large and they are endeavoring to increase them to guard against a famine when the rush comes. Larger house-

holders have placed orders and retailers are busy making deliveries. Retail quotations are firm and inclined to advance. Pocahontas prices have increased because of a scarcity of labor in the mining district.

Lake trade is also active and the volume of fuel going to the Northwest is only limited by the car supply. The dock situation at the upper lake ports is satisfactory and little congestion is reported. Chartering of bottoms is still going on and the lake movement will be active to the close of navigation. The Toledo docks of the Hocking Valley have loaded 2,000,000 tons since the season started.

Eastern Ohio operators are probably the worst sufferers as a result of the shortage of cars. It is estimated that the output in that district is but 60 per cent. normal. In the Hocking Valley the production is estimated at 85%, in the domestic fields about 75% and in the Pomeroy Bend field, about 65% of the average.

Steam business is holding up well under the circumstances and is expected to continue active during the fall at least; manufacturing establishments are taking quite a good tonnage while railroad fuel is also in fair demand. Only a few steam contracts are expiring at this time and they are being renewed at higher figures generally.

Quotations in the Ohio fields are as follows:

	Hocking	Pittsburgh	Pomeroy	Kanawha
Domestic lump.....	\$1.75 @ 1.70	.....	\$1.85 @ 1.75	\$1.70 @ 1.65
3-4 inch.....	1.60 @ 1.55	\$1.30 @ 1.25	1.55 @ 1.60	1.55 @ 1.50
Nut.....	1.30 @ 1.20	.....	1.40 @ 1.25	1.25 @ 1.20
Mine-run.....	1.40 @ 1.35	1.20 @ 1.15	1.30 @ 1.25	1.25 @ 1.20
Nut, pea and slack..	0.70 @ 0.65	.....	0.75 @ 0.70	0.75 @ 0.70
Coarse slack.....	0.60 @ 0.55	0.85 @ 0.75	0.65 @ 0.60	0.65 @ 0.60

HAMPTON ROADS, VA.

Heavy dumpings during the week, principally for shipment into New England. Railroad yards well cleaned up and suppliers pressed for tonnage. Domestic trade opening up.

Coal dumpings over the tidewater piers during the past week have been heavy, a large fleet of schooners, as well as cargo steamers, having been loaded for ports in New England. There has also been a good movement in the foreign trade of both cargo and bunker coal. On account of the heavy dumpings and the light movement to tidewater, there is little accumulation in any of the railroad yards. A large number of the suppliers are short of coal, with a considerable number of vessels waiting in the stream.

There is practically no spot coal offering as the agencies are using all available on contract business. Prices for Pocahontas and New River grades have remained about the same as during the last two weeks.

Dealers in domestic coal, who have been doing practically nothing during the summer months, are now being rushed with orders as householders are beginning to get in their winter supply. Prices for domestic coal range from \$4 for New River and Pocahontas to \$7.50 for anthracite nut, stove and egg.

There have been foreign shipments to Dakar, Rio, Coronel, La Plata, Panama, Georgetown and Puerto Gallegos, Patagonia.

LOUISVILLE, KY.

Slack coal experienced a sharp reversal in form and is now heavy. Car supply becoming tighter and the new hopper bottoms are again a factor in the situation. Indications point to high prices for October delivery.

The local market for screenings has experienced an abrupt and unexpected change from almost famine conditions to an exceeding heaviness, certain grades being almost impossible to move. Some of the high-grade eastern Kentucky coals are only in moderately excessive supply, but of the western Kentucky, and other cheaper coals, the production is far in excess of the demand. The increased movement of western Kentucky domestic coal to the South and into the Kentucky market has resulted in an excessive production of screenings; as a result there has been a heavy movement of this grade into Louisville, its natural market. Large orders from the railroads have also resulted in an excessive production of pea and slack.

The lack of sufficient cars in the eastern Kentucky field has kept the supply of high-grade screenings from that district down to a comfortable margin. It is stated on reliable authority that a great deal of western Kentucky coal is being applied on contracts calling for Straight Creek and Jellico screenings, the market being flooded with the former, and the latter in moderately short supply.

Eastern Kentucky operators are again experiencing a great deal of difficulty with the big hopper cars, which they are now being forced to load in the absence of an adequate supply of gondolas. Consignees north of the Ohio River refuse flatly to accept shipments in this class of equipment,

so that they are confined almost entirely in the state. While they are being accepted there, a great deal of dissatisfaction and complaint is heard regarding them. Where shipments have been made in the hopper cars, contrary to instructions specified in orders, an allowance of 15c. per ton is usually made for unloading.

In view of the prospective labor troubles next month, operators are making no contracts for deliveries beyond September, and \$2.25 is expected to be the minimum on block for October deliveries. At the moment this grade is quotable at \$2.10 with round at \$1.60 to \$1.65, and screenings 85c. to 90c. The over-supply of western Kentucky screenings has created a heaviness in that market, which is now quotable at about 50c. or 60c., and even less for nut and slack, and 30c. to 40c. for pea and slack.

BIRMINGHAM, ALA.

Demand continues good for steam and domestic coal. Coke shows improvement. Car shortage still serious. Pig iron firm with large sales. Cast-iron pipe very quiet, both in amount of business and price.

The demand for steam coal is very good in this district, and lump coal is picking up after about ten days of rather a quiet market. The market on both furnace and foundry coke is good, with prices from \$3.25 to \$3.50 on furnace coke, and \$3.50 to \$4.25 on foundry. The pig-iron market is booming. One producer has sold since July 4 over 120,000 tons for delivery during the balance of this year. Some iron is being sold for the first quarter of next year, at prices from 25 to 50c. above this year's deliveries.

The car supply is still serious, many of the mines running from one-third to one-half time on account of the shortage. The railroads are making every effort to get their cars back from all foreign lines, but it is quite evident that this winter will show them far short of the necessary equipment to move the product. Manufacturers of cast-iron pipe state that there is very little doing in that line and that prices are far from being satisfactory.

NEW ORLEANS

Spirited competition on between the agencies. Heavy shipping stimulates bunker trade. Coal men do not expect to see early conversion of Southern Pacific ships to oil burners, despite company's announcement.

The placing of the contract for the school board's annual coal supply developed some of the most spirited competition between the different agencies that has been seen in the city for years. The Tennessee, Coal, Iron & Railway Co. secured the bituminous and the C. A. Andrews Coal Co., Ltd., the anthracite contract.

Car shortage is becoming more pronounced but large quantities of Alabama coal continue to arrive daily.

An oil-tank steamer, the "Topila," has been put in service by the Southern Pacific Co. between here and Tampico, and fuel oil is being stored with the announced intention of beginning the use of oil as soon as the vessels of the company can be converted. While coal men are inclined to doubt that a change to oil will be made while same is at the present price, the loss of this business, even if it comes this winter, will be more than replaced by the new lines.

Exports for the week were confined to the regular shipments to Bluefields and Cape Gracias, Nicaragua; Port Barrios, Guatemala; Belize and Stann Creek, British Honduras.

DETROIT, MICH.

Prompt coals steady at a relatively high level. Car shortage becoming more serious and free tonnage scarcer. Anthracite improving.

Bituminous—The local steam market continues to show a steady improvement from day to day, and it is difficult to anticipate what the future will bring forth. However, all indications point to a still further advance. There is very little spot coal to be had, and a pronounced scarcity of cars has developed in the West Virginia field. Contracts figures continue as strong as ever and many enticing offers are being rejected by operators, indicating that they desire as much free tonnage as possible for use in the open market this fall. There seems to be a general disposition among all classes of coal men to speculate on the probabilities of a rising market this winter.

The domestic situation is also beginning to attract attention locally. Inquiries are becoming steadily more numerous and large distributors are showing a disposition to get into the market. Prices are advanced over last year and some of the local agencies who have neglected to lay in their winter supply, are now finding themselves in a precarious position. Very little Pocahontas coal is coming in and it commands a ready premium, all sizes having advanced 10c. per ton within the last week. Spot coal is selling for 25c. above circular.

The local market is now quotable on the following basis:

	W. Va. Splint	Gas	Hock- ing	Cam- bridge	No. 8 Ohio	Poca- hontas	Jackson Hill
Domestic lump.....	\$1.75	.....	\$1.75	.....	.....	\$2.60	\$2.50
Egg.....	1.75	.....	1.75	.....	.....	2.60	2.20
Steam lump.....	1.45	.....	.....	.....	.....	.....	.....
4-in. lump.....	1.20	\$1.25	1.15	\$1.15	\$1.20	.....	.....
Mine-run.....	1.10	1.10	1.10	1.10	1.10	1.60	.....
Slack.....	0.90	1.00	0.75	0.80	0.85	.....	.....

Anthracite—The hard-coal market has failed to show any change during the week. The domestic sizes seem to be moving about as usual, stove and egg being the most active at the present time. Pea coal is moving a little more freely and expectations are that it will continue to improve as the cool weather advances.

INDIANAPOLIS

Cooler weather resulted in a further tightening in the car situation. Some activity in the retail trade. General industrial conditions improving.

There is some complaint of a shortage of cars at the mines, now that there has been a few days of cool weather that has stirred up the trade somewhat. In the Terre Haute district it is stated that mines could put in full time, if the Big Four, Chicago and Eastern Illinois and Vandalia roads would supply enough cars. The Chicago and Eastern Illinois reports that it has 1500 men at work getting coal cars in good condition. This road is the heaviest coal carrier in the state. Since it has been separated from the Frisco system, some of the old directors are back on the board and they at one time gave the coal traffic good attention. Operators are therefore hopeful.

In the retail trade consumers of domestic are hurrying to get in a supply before an expected advance in prices, Oct. 1. This activity reflects back to the mines. Prices hold steady, with some slight improvement in the inquiry for screenings, and a gentle pushing of industrial activities to their usual fall schedule. Mine-run, too, is in somewhat better demand.

ST. LOUIS, MO.

Cool weather locally has developed some demand. Country trade improving. Franklin County and Cartersville particularly strong. Standard grades the weak department.

The local market did not hold out as was anticipated last week practically every grade breaking from 5 to 20c. a ton. However, with the beginning of this week things looked different, and it is likely that prices will be maintained from now on. The main cause of the weakness was the extreme warm weather; with the first of this week conditions changed, and there is a general demand for coal. Country business is also picking up, and everything indicates that the balance of the month will be good.

Franklin County is unusually strong and Cartersville is creeping along fairly well; the end of the month should see both these coals commanding a good figure on account of the car shortage and other minor troubles that are besetting the operators. Standard coal is still being sold at cost of production. The operators in the 5th and 9th Districts seem unable to get out of the rut they have been in for several months.

There is little anthracite and smokeless moving, but there is an abundance of coke coming in for which there is no demand. A fairly good tonnage of Arkansas is moving in this season, which is taking the place, to some extent, of West Virginia smokeless.

The prevailing circular is:

	Cartersville and Franklin Co.	Big Muddy	Mt. Olive	Standard
2-in. lump.....	.....	.....	\$1.40	\$1.05@1.15
3-in. lump.....	.....	.....	1.50	.....
6-in. lump.....	\$1.60 @ 1.70	.....	1.60	1.25@1.35
Lump and egg.....	1.50 @ 1.60	\$2.15	1.60	.....
No. 1 nut.....	1.30 @ 1.40	.....	1.05	.....
Screenings.....	0.55	.....	0.40	0.30@0.35
Mine-run.....	1.50	.....	.....	.....
No. 1 washed nut.....	1.60	.....	1.60	.....
No. 2 washed nut.....	1.30	.....	1.50	.....
No. 3 washed nut.....	1.20	.....	.....	.....
No. 4 washed nut.....	1.15	.....	.....	.....
No. 5 washed nut.....	0.40	.....	.....	.....

PORTLAND, ORE.

The announcement of an advance in wholesale coal prices at the Wyoming and Utah mines here last week was followed this week by an increase in the price on standard coals to the extent of 25c. per ton. The opinion prevails that there will be no oversupply of coal in the market the coming winter, but rather a shortage, unless shippers are fortunate in getting rolling stock promptly.

PRODUCTION AND TRANSPORTATION STATISTICS

ANTHRACITE SHIPMENTS

The following is comparative statement of the anthracite shipments for August and the first eight months, of the years 1912-13, in long tons:

	August		8 Months		
	1913	1912	1913	%	1912
Phila. & Reading...	855,343	1,286,651	8,616,490	18.91	7,765,878
Lehigh Valley...	1,035,934	1,261,814	8,640,052	18.90	7,119,159
Cent. R.R. N. J.	656,154	901,870	6,007,368	13.14	5,139,578
Del. Lack. & West	862,602	918,734	6,523,639	14.27	5,519,630
Del. & Hudson...	603,876	896,130	4,698,004	10.28	3,957,185
Pennsylvania...	469,875	525,732	4,076,893	8.79	3,426,278
Erie...	686,985	743,950	5,449,938	11.92	4,620,058
Ont. & Western...	199,131	241,710	1,697,222	3.72	1,410,958

Total.....5,369,900 6,576,591 45,709,606 100.00 38,958,723 100.00

Stocks at Tide on Aug. 31 were 575,385 tons as compared with 537,404 tons on July 31.

THE CAR SITUATION

American Ry. Association reports surpluses and shortages of coal equipment for two weeks ended Sept. 1, as follows:

	Surplus Shortage		Net*
New England Lines	5	185	180
N. Y.; New Jersey, Del.; Maryland; Eastern Penn.	1,741	759	982
Ohio; Indiana; Michigan; Western Pennsylvania	300	1,328	1,028
West Virginia, Virginia, North & South Carolina	614	1,953	1,339
Kentucky, Tenn.; Miss.; Alabama, Georgia, Florida	131	861	733
Iowa, Illinois, Wis., Minn.; North & South Dakota	1,087	18	1,069
Montana, Wyoming, Nebraska	218	0	218
Kansas, Colorado, Missouri, Arkansas, Oklahoma	2,203	55	2,148
Texas, Louisiana, New Mexico	504	4	500
Oregon, Idaho, California, Arizona	1,810	43	1,867
Canadian Lines	76	0	76
Total	\$8,689	\$5,209	3,480

	Mar. 15	Apr. 15	May 15	Jun. 14	June 30	July 15	Aug. 1	Aug. 15
Surplus.....	17,867	21,845	12,267	11,098	11,055	13,203	8,810	8,293
Shortage.....	3,776	2,196	4,226	2,033	2,821	1,826	4,029	7,038
Net*.....	14,091	19,649	8,041	9,065	8,234	12,377	4,781	1,255

*Bold face type indicates a surplus.

FOREIGN MARKETS

GREAT BRITAIN

Sept. 5—The market is quiet and irregular. With the exception of two or three leading descriptions, supplies of large and small coal are more than ample, colliery outputs being much increased.

Best Welsh steam.....	\$4.90@4.92	Best Monmouthshires.....	\$4.08@4.14
Best seconds.....	4.50@4.68	Seconds.....	3.96@4.02
Seconds.....	4.26@4.44	Best Cardiff smalls.....	2.46@2.58
Best dry coals.....	4.32@4.56	Seconds.....	2.28@2.40

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while these for Monmouthshire descriptions are f.o.b. Newport; both exclusive of wharfage, and for cash in 30 days.

COAL FREIGHT DECISIONS

I. C. C. No. 4631—In the matter of alleged irregularities and discrepancies in the weighing of freight by carriers subject to the act to regulate commerce.

1. Inaccuracies in weighing result in the imposition of unreasonable charges and in discrimination between shippers as effectually as do differences in the freight rate itself.

2. The record herein discloses that a majority of the track scales now in use should be at once rebuilt in order to obtain reasonably accurate results. It is also apparent that many additional scales should be installed.

3. A modern scale, properly installed and kept in proper condition, should be accurate within at least 100 pounds, and when under test it shows a variation of 100 pounds or more it should be considered out of order. All scales should be tested by the test car at least once in two months; in many cases every month.

4. Cars should never be weighed in motion coupled at both ends. They may properly be weighed in motion when

uncoupled upon scales especially designed for that purpose and in charge of thoroughly competent men. Cars should not ordinarily be weighed when coupled at one end, and never unless at points where the greatest attention is paid to the condition of the scale and the competency of the weighmaster.

5. A prolific source of error is the wrong stenciling of the tare weight of cars; when the car weighs more than the stenciled tare the shipper loses, while when the car weighs less than the stenciled tare the shipper gains. Correction of an erroneous stenciled weight is by a proper re-weighing of the car at stated times.

6. Inaccuracies in weighing particular commodities, such as grain, coal, and lumber, discussed and various remedies considered; and criticism of certain team-track weighing made.

7. General rules and practices of carriers whereby large amounts of carload freight are exempted from all weighing whatsoever considered and various criticisms and recommendations thereon made.

8. Remedies for the defects in weighing revealed by this investigation discussed at length, and the opinion advanced that some federal tribunal, perhaps this Commission, should be given authority in the following respects: (a) To fix the points at which track scales shall be installed; (b) to prescribe the standard of such scales and their installation; (c) to test or supervise the testing of such scales; and (d) supervise the operation. **Opinion No. 2399.**

COAL SECURITIES

The following table gives the range of various active coal securities and dividends paid during the week ending Sept. 13:

Stocks	Week's Range			Year's Range	
	High	Low	Last	High	Low
American Coal Products.....	85	85	85	87	80
American Coal Products Pref.....			105	109½	105
Colorado Fuel & Iron.....	33½	31½	33½	41½	24½
Colorado Fuel & Iron Pref.....			155	155	150
Consolidation Coal of Maryland.....	102½	102½	102½	102½	102½
Lehigh Valley Coal Sales.....	210	195	200		
Island Creek Coal Com.....	55	53	55	53½	47½
Island Creek Coal Pref.....	86	84	86	85	80
Pittsburgh Coal.....	20½	19½	20½	24½	14½
Pittsburgh Coal Pref.....	86½	84½	86½	95	73
Pond Creek.....	22	21	22	23½	16½
Reading.....	167½	159½	166½	168½	151½
Reading 1st Pref.....	84	84	84	92½	84
Reading 2nd Pref.....	89½	88	89½	95	84
Virginia Iron, Coal & Coke.....	46	42	46	54	37½

Bonds

Closing Bid Asked Week's Range Year's Range

Colo. F. & I. gen. s.f.g. 5s..... 93½ 98 95½ 95½ 93½ 99½

Colo. F. & I. gen. 6s..... 103 106 107½ 107½ 103½ 109½

Col. Ind. 1st & coll. 5s. gu..... 83½ Sale 83½ 83½ 77½ 85

Cons. Ind. Coal Me. 1st 5s..... 76 78 76 Aug. '13 76 76

Cons. Coal 1st and ref. 5s..... 92½ 93 Oct. '12

Gr. Riv. Coal & C. 1st g 6s..... .. 102½ April '06

K. & H. C. & C. 1st s f g 5s..... 91 .. 98 Jan. '13 98 98

Pocah. Con. Coll. 1st s f 5s..... 85 85½ 86½ June '13 86 87½

St. L. Rky. Mt. & Pac. 1st 5s..... 77½ 79 78½ Aug. '13 73 80½

Tenn. Coal gen. 5s..... 98½ 99 99 99 98½ 103

Birm. Div. 1st consol. 6s..... 101½ 102 100½ Aug. '13 100½ 103

Tenn. Div. 1st g 6s..... 100½ 102 100½ July '13 100½ 102

Cah. C. M. Co. 1st g 6s..... .. 103½ 103 July '13 103 103

Utah Fuel 1st g 5s..... .. 80 80 May '13 79½ 80

Victor Fuel 1st s f 5s..... .. 92 92½ 92 Aug. '13 92 98

Va. I. Coal & Coke 1st g 5s..... .. 92 92½ 92 Aug. '13 92 98

DIVIDENDS

Ashland Coal & Iron Ry.—Dividend of 1% payable Sept. 25 to holders of record Sept. 20.

Lackawanna R.R. of N. J.—Regular quarterly of 1% payable Oct. 1 to holders of record Sept. 9.

St. Louis, Rocky Mtn. & Pac.—Regular quarterly No. 5 on the preferred of 1¼% payable Sept. 30 to holders of record Sept. 21-29.

American Coal Products Co.—Regular quarterly of 1¼% on both the common and preferred, the former payable Oct. 1 to holders of record Sept. 25 and the latter payable Oct. 15 to holders of record Oct. 10.

❖

Coal and Coke Ry. (West Virginia)—This company owns in round numbers 100,000 acres of coal land and coal-mining rights and practically a perpetual lease on all the properties of the Davis Colliery Co., which latter concern owns about 25,000 acres of coal land and is one of the principal operating companies in West Virginia. The tonnage handled by the road has shown a steady increase from about 700,000 tons in 1907 to 1,300,000 in 1912.